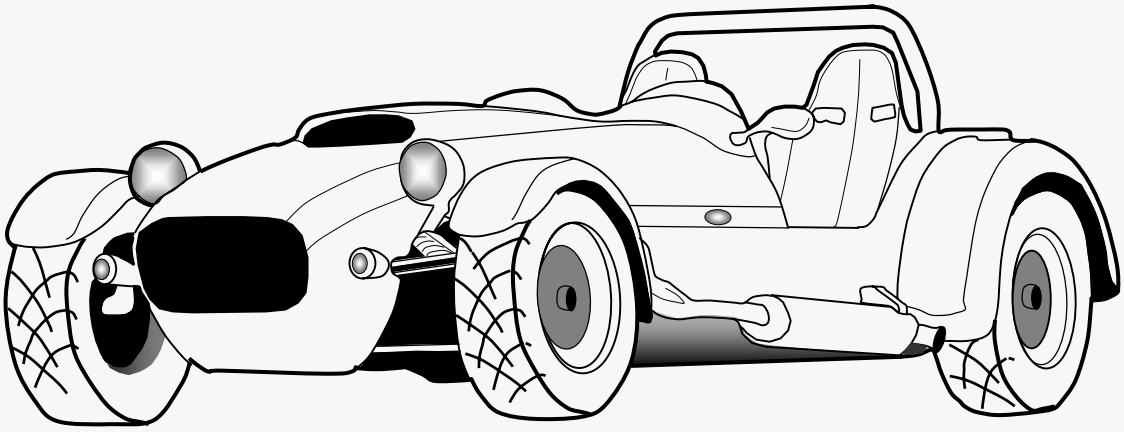
CONSTRUCTION MANUAL



MEGABUSA

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WELCOME

Because you are reading this CONSTRUCTION MANUAL you are either contemplating the purchase of a WESTFIELD Sports Car or have already done so. In either case we would like to thank you for your interest in our product which we firmly believe is the best available. To that end we are prepared to back up our claims with a full warranty on every part bought through us.

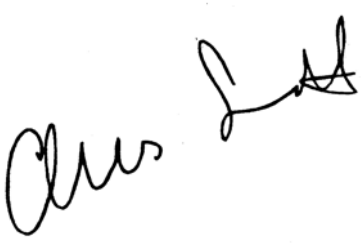
WESTFIELD SPORTS CARS were established in 1982. Since then WESTFIELD has produced many thousands of cars. We lay claim to the title of 'Europe's biggest component car manufacturer'. Though an enviable title, WESTFIELD does not intend to rest on its laurels. We are constantly improving our cars, developing many options and additions with which to further the desirability of our product.

At WESTFIELD SPORTS CARS we believe that much of the enjoyment of the car should be in its actual construction, this is why this CONSTRUCTION MANUAL has been produced.

The whole point of building a WESTFIELD is to realise a vehicle that will suit the purpose for which it is intended. With many thousands of satisfied owners, both here and abroad, we believe that at WESTFIELD we have accomplished that objective.

It is in our best interests to deliver to you the means of building a car, simply and quickly, with a minimum of complication and a maximum amount of fun.

We sincerely hope you enjoy that experience.



Chris Smith
Managing Director
WESTFIELD SPORTS CARS

CONTENTS

SAFETY .....

- You will Not need to use Welding or Grinding equipment in the Building of a WESTFIELD Sports Car, however, it is VERY IMPORTANT that you take ALL necessary SAFETY Precautions.

1. ALWAYS WEAR:
   - Goggles or Protective Glasses and Suitable Footwear at all Times
   - Protective Gloves when Handling Fibreglass or Carbon.
   - Dust Mask and Ear Protection when Working with Fibreglass or Carbon.

2. DO NOT Guess at the Torque Settings.
   - Always refer to the Torque Settings Table.
   - If you do not own a Torque Wrench, then hire one from a Good Quality Hire Shop.

3. IT IS ESSENTIAL that the Supports placed Under the Chassis during the Build Process are Suitable and SAFE for use.
   - WESTFIELD SPORTS CARS manufacture Chassis Support Frames that are Designed Specifically for the Purpose and are available from the Factory.

4. DO NOT use Bricks, Building Blocks or Wooden Packing Cases.
   - Bricks and building blocks are NOT Suitable as they are liable to topple.
   - Wooden Packing Cases are NOT suitable, as they are liable to Crush as the Weight of the Car increases during the Build Process.

5. DO NOT Connect the Battery +TVE Lead until the Wiring Loom has been Fully Installed and ALL Earth Cables have been Connected.
   - The Battery MUST NOT be connected until ALL TESTS have been completed.

6. DO NOT Fill the Fuel Tank until the car is complete.
   - The Fuel Tank MUST NOT be filled until all of the 'SET-UP' Tests have been completed.

7. PLEASE take Care with Brake Fluid and Brake Fluid Spillage.
8. ALWAYS have a Suitable Fire Extinguisher at Hand.

Have FUN but please, be SAFE!

GETTING STARTED

1. If you HAVE purchased the Optional WESTFIELD Chassis Support Stands then, with the help of an assistant, Lift and Position the Chassis onto these Supports.
   - If you HAVE NOT purchased these stands, then ensure that the chassis is positioned onto suitable supports, which allow the various parts to be fitted.

IMPORTANT

- DO NOT ATTEMPT to MODIFY ANY of the items supplied without specific reference to the TECHNICAL HELPLINE at the FACTORY

STORAGE OF BODYWORK

- The Bodywork MUST NOT be Stored in Plastic Sheet, in Damp or Humid Conditions.
- DO NOT Store Bodywork in Direct Sunlight, in Greenhouses or Conservatories.
- WESTFIELD SPORTS CARS WILL NOT accept any WARRANTY CLAIM for Damage to Bodywork where the Damage has been caused by any of the above conditions.

CHASSIS INFORMATION

- The Chassis for the WESTFIELD MEGABUSA can be purchased in either a Bare Metal State, suitable for painting, or Powder Coated.
- WESTFIELD SPORTS CARS recommend that the chassis be supplied with the powder-coated option.
- The powder-coated version is cosmetically superior and has greater durability and resistance to corrosion than can be achieved with the painted option.

PAINTING the BARE METAL CHASSIS

- Preparation is VERY important!
  The overall appearance and resistance to corrosion will be totally dependent on time spent in the preparation of the chassis for painting.
- MAKE SURE that the chassis is thoroughly de-greased and keyed using 80 grit emery cloth.
- If possible, have the chassis shot-blasted with FINE shot.
- Select a good quality paint and apply the paint to the chassis in accordance with the manufacturers instructions.
- WESTFIELD SPORTS CARS DO NOT recommend a specific product.

TOOLS you will NEED

1. Combination Spanner Set : 8mm To 19mm A/F Metric
   Combination Spanner Set : 5/16" To 3/4" A/F Imperial
2. Socket Set : Imperial And Metric
3. Torque Wrench : 1/2" Square Drive : Range O-100 lb ft
4. Drill Set To Include : 5/32", 3/16", 1/4" & 5/16" Drill Bits
5. Metric `Allen' Keys : 1 Set
6. Socket Drive `Allen' Key : 6mm
7. Socket Drive `Allen' Key : 8mm
8. Circlip Pliers : Internal And External
9. Tap : 1/2" UNF
10. Tap : M18 X 1.5mm
    - (Note The M18 X 1.5mm Tap Is Only Required To Clean Out The Residual Powder Coating That May Have Been Left- In The Top Wishbone Threads)
11. Hole Cutter : 1 ¼" Diameter - Steering Column
12. Hole Cutter : 1 ¾" Diameter - (45mm) Loom
13. Hole Cutter : 2" Diameter - Gear Stick
14. Pop Rivet Gun
15. Brake Pipe Bending Tool
16. Rivnut Fixing Kit
17. Electric Drill
18. 12" Hacksaw
19. Engineering Hammer
20. Centre Punch
21. Hide Hammer
22. Two 'G' Clamps
23. Bench Vice : Machine Type
24. Flat Blade Screwdrivers : 1 Set
25. Phillips Screwdrivers : 1 Set
26. Round File : 5/16" Diameter
27. File : 12" Long Flat Blade File
28. Tape Measure
29. Metal Cutters
30. Copper Slip
31. Silicon Sealant

IN ADDITION, for the WESTFIELD `SEi' ONLY:

1. 41mm A/F METRIC Socket
2. Torque Wrench, ½" Square Drive with a Range of 250 lb ft. (If necessary , HIRE both the Socket and Torque Wrench when required.)

SUZUKI MEGABUSA DONOR LIST

PARTS REQUIRED:-

- Engine & Gearbox Complete (With Number.)
- Throttle Linkages & Injection Assembly
- Full Engine Wiring Harness* (Requires Modification – See Note Below)
- E.C.U.

SENSORS:-

- Intake Air Pressure Sensor
- Atmospheric Pressure Sensor
- Intake Air Temperature Sensor
- Starter Motor Assembly
- Starter Motor Relay
- Chain Sprocket Nut & Washer
- Ignition Coils x 4 (These are part of the Spark Plug Caps)
- Regulator / Rectifier Unit
- Fuel Pump Relay
- Dash Complete (For Fault Finding)
- Photo Copy Of Donor Log Book If Available

IMPORTANT NOTES:

- Never purchase engines with any damage to casings or without IDENTITY NUMBERS.
- Establish if the safety recall has been completed on Timing Chain Tension Adjuster (Suzuki Warranty). If this has been done there will be a 'RECALL COMPLETION' LABEL attached under the pillion seat on the left hand side of The 'U' LOCK storage area.

Example:-

Note

The Wiring Loom will require modification before installation.
WESTFIELD SPORTS CARS can carry out this modification for a fee.

TORQUE CHART

Settings in Pounds Feet and Newton Metres:		ft-lbs.	Nm	
Three Way Brake Pipe Unions		5	7	
Rear Brake Caliper Mounting Bolts (Steel)		40	54	*
Steering Rack Mounting Bolts to Chassis		20	27	
Track Rod End Nuts to Steering Arm		28	38	
Wishbone Securing Bolts to Chassis		30	40	
Lower Ball Joint Securing Bolts to Wishbone		25	34	
Lower Ball Joint Nut to Upright		28	38	
Top Ball Joint Nut to Upright		25	34	
Steering Column Upper Mounting Bolts		20	27	**
Steering Column Shaft Couplings		20	27	**
Steering Column Securing Clamp		28	38	**
Front Brake Caliper Mounting Bolts (Steel)		40	54	*
Shock Absorber to Chassis Mounting Bolts		30	40	
Propshaft to Differential Securing Bolts		35	47	*
Handbrake Mounting Bolts		22	30	
Roll Bar Bolts		45	61	
Seat Belt Mounting Bolts		26	35	
Steering Wheel Nut		35	47	
Wheel Nuts (Rimstock)		65	90	
Trailing Arms to Chassis	(SE)	30	40	
Trailing Arms to Axle	(SE)	30	40	
Panhard Rod to Chassis	(SE)	30	40	
Panhard Rod to Axle	(SE)	30	40	
Drum Brake Back Plate Bolts	(SE)	20	27	*
Differential Unit Bolts to Chassis	(SEi)	30	40	
Differential Unit Studs to Chassis	(SEi)	40	54	
Differential Stabiliser to Chassis	(SEi)	20	27	
Stabiliser to Differential Set Screws	(SEi)	20	27	
Rear Brake Caliper Mounting Bolts	(SEi)	35	47	*
LOBRO joints, `TORX'/`ALLEN' Bolts	(SEi)	25	34	*
Drive Shaft Hub Nut	(SEi)	250	340	
Propshaft to Rev. G/Box Flange Securing Bolts + BINX Nuts x 12	(SEi)	20	27	*
Propshaft to Sierra Diff Bolts x 4	(SEi)	35	47	
Oil Pressure Switch		9	12	
Neutral Switch		9	12	
Prop Flange (Sprocket) Cap Head Retaining Bolt		39	54	*

TORQUE CHART Continued…

Settings in Pounds Feet and Newton Metres:	ft-lbs.	Nm
6mm Bolts	9	12
8mm Bolts	18	24
9mm Bolts	20	27
10mm Bolts	28	39
Sump Pan Retaining Bolts (In sequence as instructed)	9	12

General Notes:

i) Use the Bolt Finder Chart to identify the CORRECT bolt sizes

ii) Use Extra Care when Torque Tightening into Alloy Engine Block & Components.

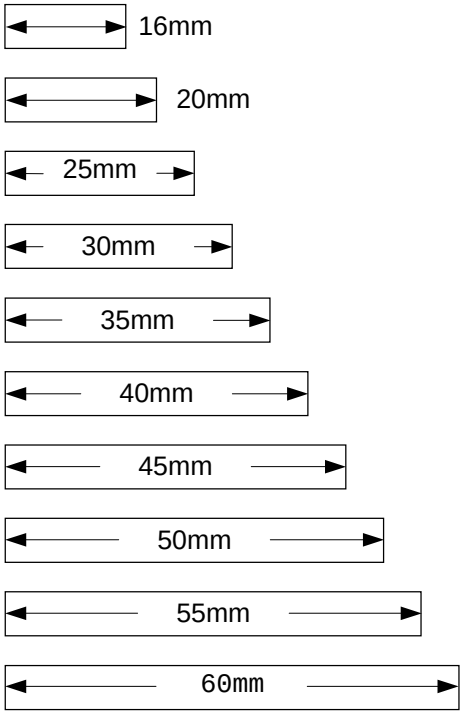
* Denotes: APPLY a Thread Locking Adhesive to threads when fitting
** Denotes: MAXIMUM Torque Setting

Suspension Bolt Tightening Notes:

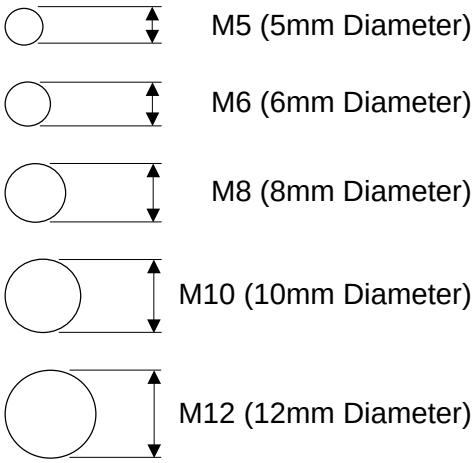
i) It is IMPORTANT to REMEMBER that ALL suspension bolts and Nyloc Nuts will be Torque tightened during the Set-Up stage.
ii) WESTFIELD SPORTS CARS STRONGLY RECOMMEND that during the assembly of the suspension that ALL suspension bolts and Nyloc Nuts are `NIPPED' ONLY and NOT Torque tightened.

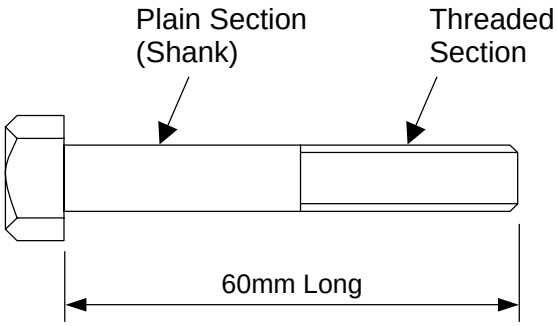
BOLT FINDER PAGE

METRIC BOLT FINDER
(Actual Length)

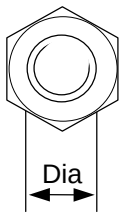


DIAMETER
(Actual Size)





Measure length from below head as shown



(Diameter)

NOTES:

i) The DIFFERENCE between a BOLT and a SETSCREW is:
   - A Bolt is only partially threaded and has a plain upper section whereas a Setscrew is threaded along its whole length.

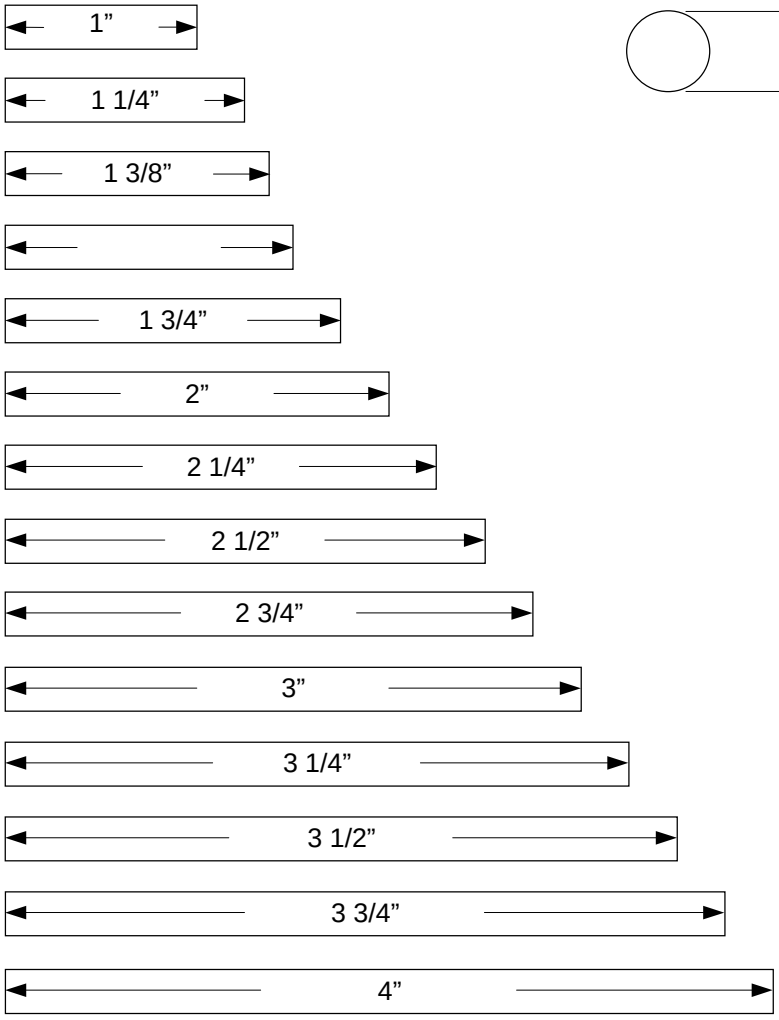
ii) The Length of a BOLT or a SETSCREW is measured from the underside of the head, refer to Diagrams above.

iii) The Diameter of a BOLT is measured across the plain (non-threaded) section.

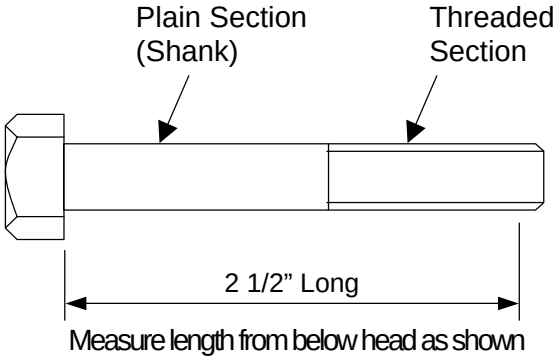
iv) The Diameter of a SETSCREW is measured across the top of the threads.

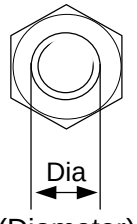
BOLT FINDER PAGE

IMPERIAL BOLT FINDER
(Actual Length)



DIAMETER
(Actual Size)





ALUMINIUM PANEL FITTING

© When fitting the Aluminium Panels make sure that all holes drilled into chassis are covered by a recommended Silicon Sealant (recommended Silicon Sealant available from Westfield Sports Cars). Panels should be fitted while Silicon is still wet.

© Always make sure that the chassis is de-burred after drilling and before applying the Silicon Sealant.

© It is recommended that the Aluminium Panels are trial fitted first, then held to the chassis using 'G' Clamps (it is best to cover 'G' Clamp Heads with Foam Tape so as not to damage the Aluminium Panels). Once the Panel is in place drill the chassis using a 4.1 Dia Drill bit through the holes provided in the Aluminium Panels. Then remove Panel de-burr chassis and re-fit using Silicon Sealant and 4.1 x 10mm Dome Head Closed Pop Rivets.

Tools Required:-

- Electric Drill / 4.1 Dia Drill Bit / 'G' Clamps / Pop Rivet Gun / Caulking Gun

Parts Required:-

- Aluminium Panel Set / Silicon Sealant / 4.1dia x 10mm Dome Head Pop Rivets

Panel Number in order of fitting	**Description Refer to Diagram 1**	**Securing Method**	**Notes**
1 & 2	Transmission Tunnel Left & Right	See Note A	Trial fit and drill then remove for access during Fuel, Brake Pipe and Wiring Loom installation. Silicon Seal and secure once these installations are complete.
3	Rear Bulkhead	See Note A	Silicon Seal on final fitment
4 & 5	Front Bulkhead, Left and Right	See Note A	Silicon Seal on final fitment
6	Scuttle Panel	See Note A	Silicon Seal on final fitment
12	Floor Panel	See Note A	Silicon Seal on final fitment
7	Pedal Cover	See Note C	Fit after all Panels and Bodywork are completed
8 &9	Reverse Box Inspection Covers	Self Tapping Screws	Trial fit and drill. Re-fit after Reverse Box and Propshafts are installed
10 & 11	Transmission Tunnel Tops	Self Tapping Screws	Trial fit and drill. Re-fit after all other components have been completed in tunnel
Optional	Exterior Panels	See Note B	If purchased fit before bodywork
Optional	Interior Panels		Fit after bodywork completed

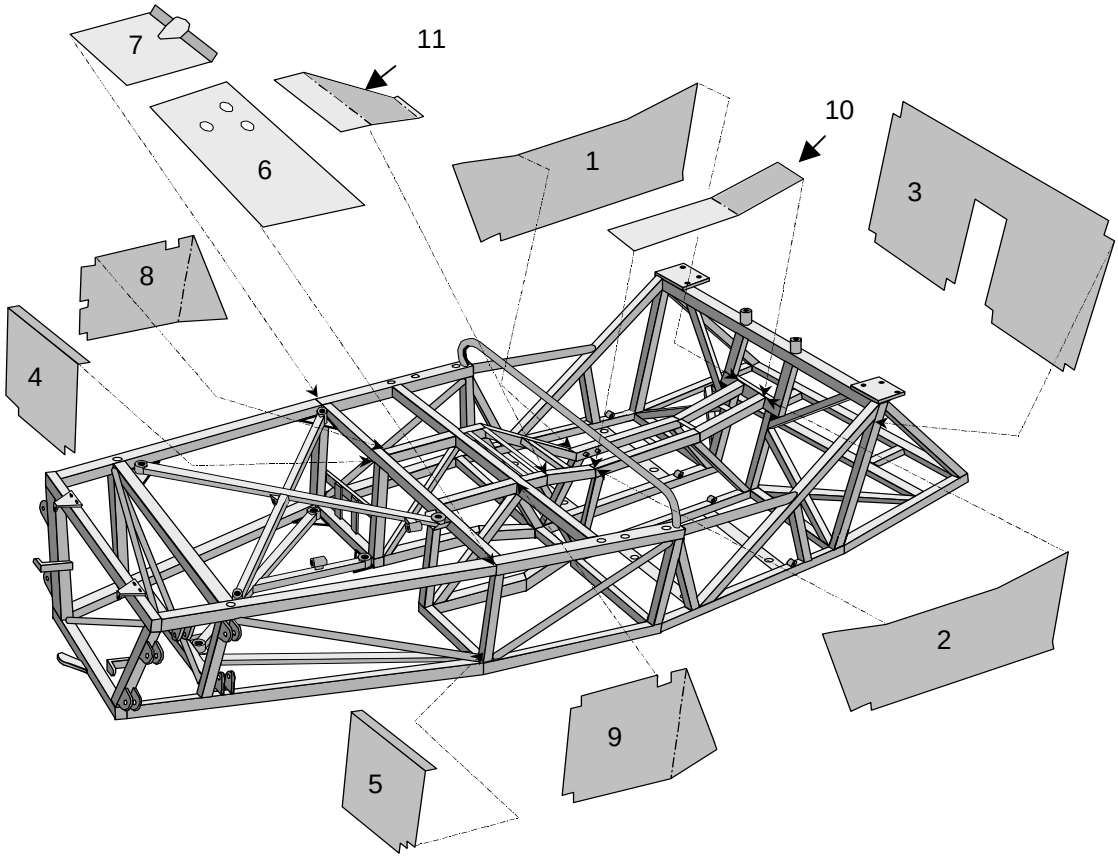
NOTE A: 4.1mm Dia x 10mm Dome Head Pop Rivets
NOTE B: 9/64 Dia x
NOTE C: M5 x 16mm Button Head Screws

ALUMINIUM PANELS FITTING CONTINUED

Procedure:

- Identify the Transmission Tunnel Side Panels, shown as Items 1 & 2 in Diagram 1.
- First, align and secure one of the panels to the chassis using `G' Clamps.
- Drill a series of 4.1mm diameter holes at 50mm spacing through both the panel and the chassis rail.
- For Ease of Access it is recommended that Panels 1 & 2 are not secured to Chassis until the fitting of the Fuel Pipes, Brake Pipes and Wiring Loom has been completed.

Diagram 1.



- Identify the Rear Bulkhead Panel, as shown in Diagram 1, Item 3
- Fit the rear bulkhead panel to the chassis

  Note: It will be necessary to flex the panel in the centre so that the panel can be positioned on the chassis.
- Secure to chassis using Silicon Sealant and 4.1mm Dia x 10mm Dome Head Closed Pop Rivets

ALUMINIUM PANEL FITTING CONTINUED

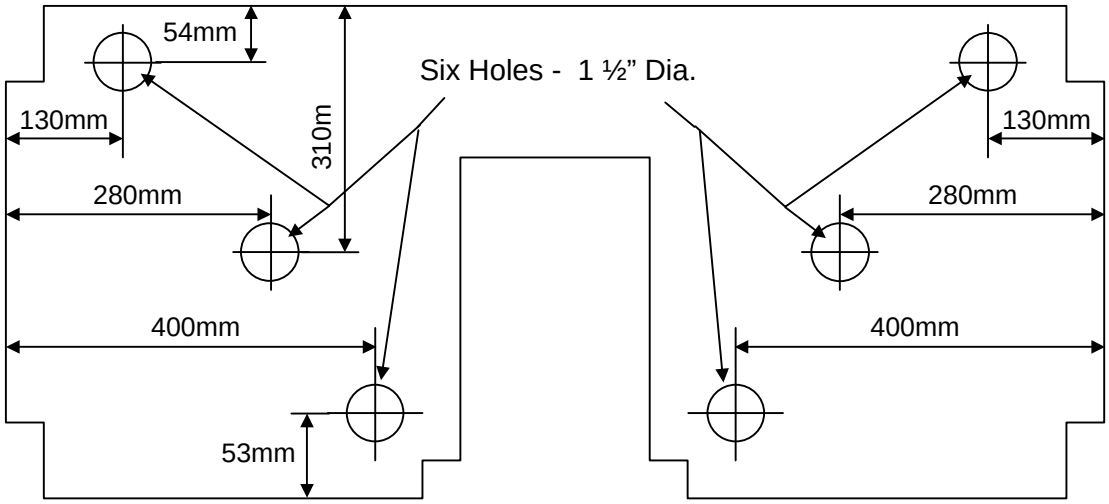


Diagram 2.

DOES NOT APPLY TO SE MODEL

- Identify the two front bulkhead panels, shown as item 4 & 5 on Diagram 1.
- Form a 90° bend at the top of each panel

Note: i) The 90° bend is necessary to allow each of the front bulkhead panels to fit UNDER the front bulkhead chassis rail.

ii) The front bulkhead panels MUST be fitted <u>before</u> the full length floor panel, (Item 12 – Diagram 3), to allow sufficient access for the pop rivet gun.

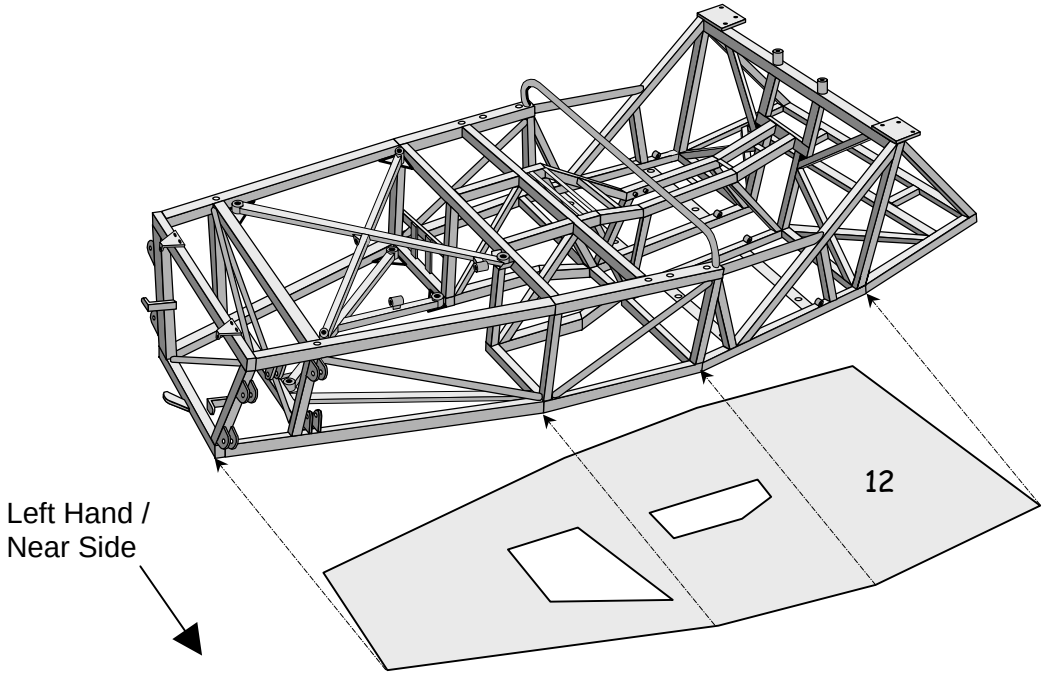


Diagram 3.

<u>NOTE</u>: When Floor Panel Is In Fitted Position, The Engine Clearance Hole MUST be Biased Towards The Left (N/S) Of The Chassis.

ALUMINIUM PANEL FITTING CONTINUED

- Identify the scuttle panel, shown as Item 6 – Diagram 1.
- Fit the scuttle panel to the chassis.
- Turn the chassis over so that the underside is uppermost.
  Note: Protect the chassis from damage during this operation.
- Identify the full length floor panel, shown as Item 12 – Diagram 3.
- Trial fit this panel to establish a correct fit.
- Remove the panel and modify as necessary to fit correctly & then de-burr.
- Re-fit using Silicon Sealant and secure the panel in place with 4mm diameter x 10mm long dome head Closed Rivets positioned at 50mm intervals. (See Note On Diagram 3)
- Once the Silicon Sealant is dry, turn the chassis to its upright position.
- Identify the pedal inspection cover, shown as Item 7 – Diagram 1.
  Note: i) The pedal inspection cover will be fitted over the pedal assembly.
  ii) The pedal inspection cover MUST not be fitted until all other panels and fitment of bodywork has been completed.
  iii) The pedal inspection cover is FibreGlass and Black in colour.

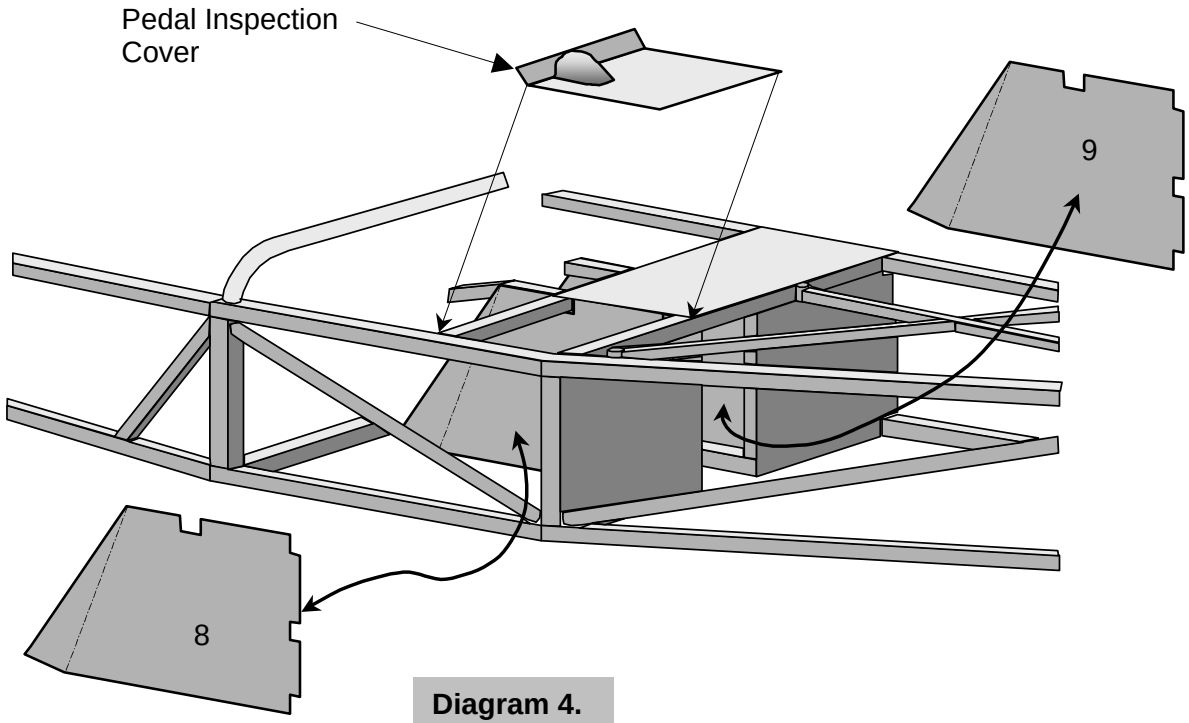


Diagram 4.

- Identify the reverse gearbox inspection covers, shown as Items 8 & 9 – Diagram 1 & Diagram 4.
- Trial fit & drill these panels, then remove and keep safe.
  Note: i) The panels are not fitted until the Gearbox & Loom installations are completed.
  ii) The panels should be secured to the chassis with hexagon head self-tapping screws – 17 per panel.

CHASSIS EXTERIOR PANELS – OPTIONAL

- The Exterior Chassis Panels are available from the factory as an Optional Extra.
- These panels are designed to fully enclose the outside of the chassis. See Diagram 5 below.

Procedure:

- The side panels should be sealed with Silicon Sealant prior to being secured to the chassis with 4mm diameter x 10mm long dome head Closed Rivets positioned at 50mm intervals.
  Note: The exterior panels must be fitted before the bodywork.

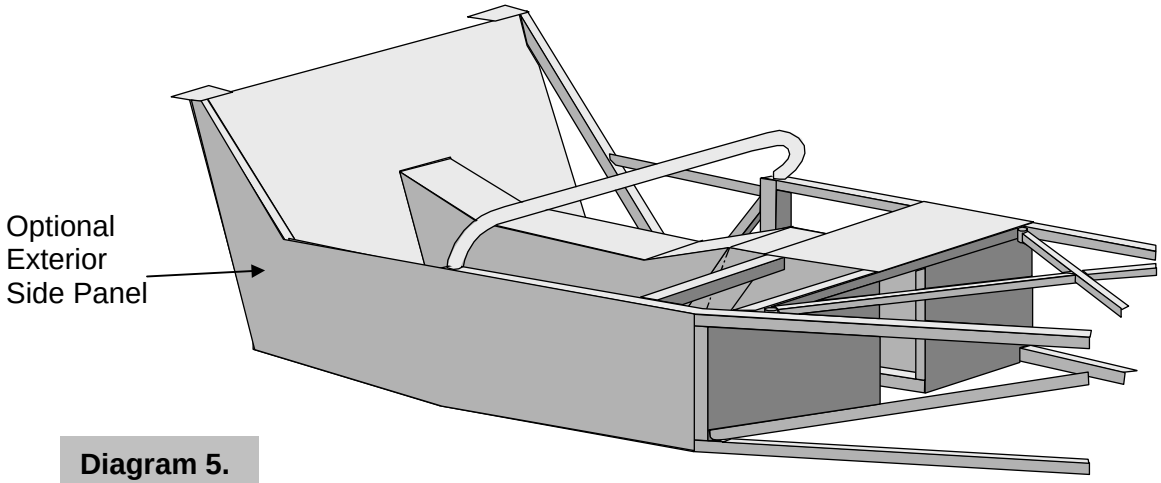


Diagram 5.

CHASSIS INTERIOR PANELS – OPTIONAL

- The Interior Chassis Panels are available from the factory as (Bare Metal or Covered) an Optional Extra.
- These panels are designed to fully enclose the inside of the chassis. See Diagram 6 below.

Procedure:

- Fit the Internal Panels into position within the chassis sides and adjust for fit.
- Using a 3mm-drill bit, drill through the panel and into the chassis behind.
- Secure the panel to the chassis using 3mm x 10mm Rivets at 250mm intervals.
- Note: The interior panels can only be fitted after the bodywork has been fitted.

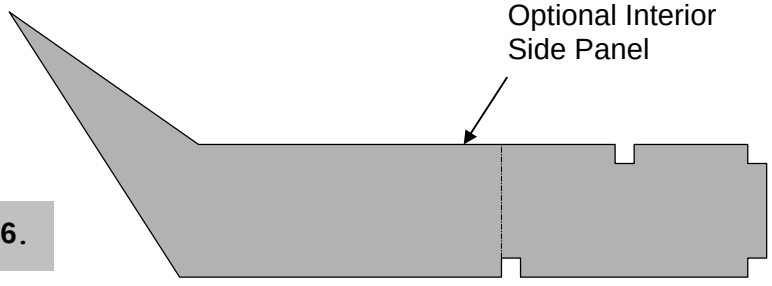


Diagram 6.

FUEL PIPE FITTING PROCEDURE

- It is ESSENTIAL that the fuel hose used conforms to the British Standard BS AU 108/2 L4/C4/R. (As does the hose supplied by WESTFIELD SPORTS CARS.)

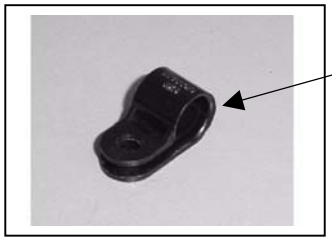
➢ DO NOT use a plastic fuel hose.

Tools Required:-

- Electric Drill / 4.1 Dia Drill Bit / Pop Rivet Gun / Pipe Bender

Parts Required:-

- 2 x 1830mm Steel Fuel Pipes
- 14 x Fuel Pipe(Nx 3) 'P' Clips
- 14 x 4.1 Pop Rivets



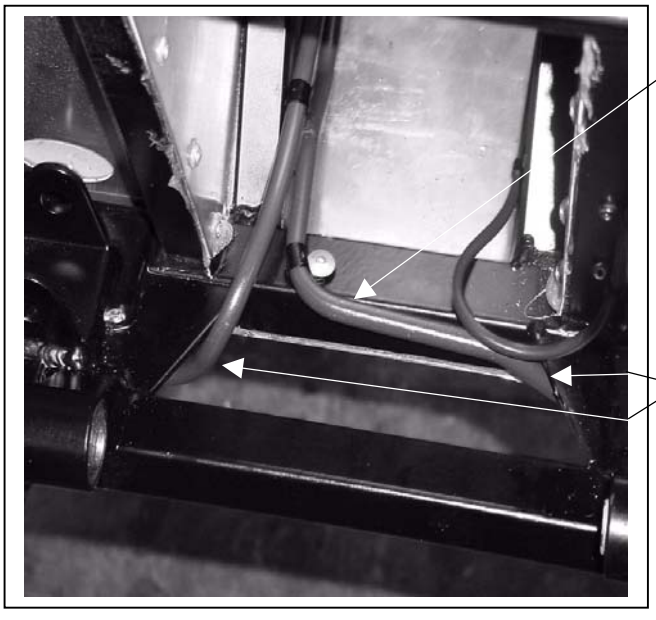
'P' Clip (NX 3)

Procedure:-

- It is best to work from the rear of the car forward always lay the fuel pipe up into the tunnel in the correct position and mark each bend with a Marker Pen, only attempt one bend at a time as fuel pipe cannot be RE-BENT afterwards. RE-BENDING THE FUEL PIPE MAY KINK THE PIPE OR FRACTURE IT.

- Secure all Metal Fuel Pipes with "P" Clips Riveted to Chassis at a approximately 150mm intervals. Always keep Fuel Pipes away from any moving parts.

View 1

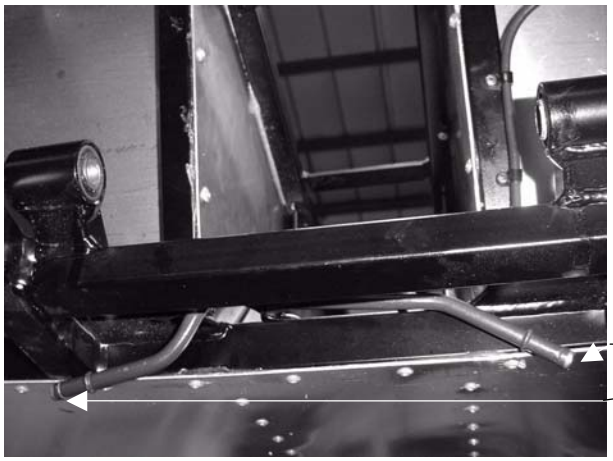


Lower Fuel Pipe runs from the Left to the Right Hand side of the Chassis at the rear.

Terminate both Fuel Pipes under the rear of the Chassis (see Diagram 2)

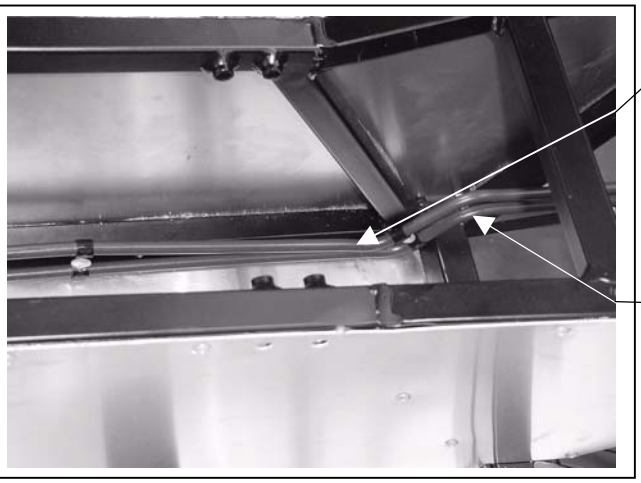
FUEL PIPE FITTING PROCEDURE CONTINUED

View 2



Both Fuel Pipes should Terminate under the rear of the Chassis.
WARNING. DO NOT LET FUEL PIPES PROTRUDE TOO LOW UNDERNEATH CHASSIS.

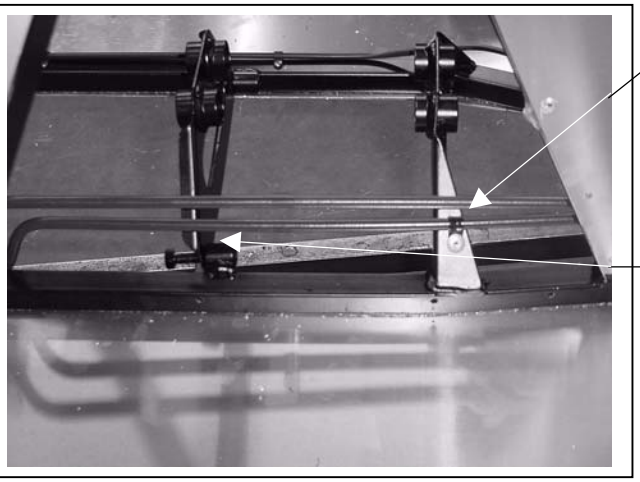
View 3



Run both Fuel Pipes along lower Chassis Rail on passenger side.

Bend Fuel Pipes up from this point so they run over the top of the Reverse Box Mounts.

View 4



Run Fuel Pipes over the top of the Reverse Box Mounts.

DO NOT ATTACH Fuel Pipes to Detachable Reverse Box Mount.

FUEL PIPE FITTING PROCEDURE CONTINUED

View 5

Fuel Pipes should follow lower edge of Passenger Bulkhead Panel and be bent up at a 90 degree angle towards the end of each pipe.

BRAKE PIPE FITTING PROCEDURE

- ALWAYS USE NEW BRAKE PIPES.
- TAKE CARE when FORMING the brake pipes to make sure that you achieve a smooth uniform bend using a pipe bending tool if possible.
- Westfield recommends that you PRACTICE bending on a scrap or spare brake pipe before attempting to bend any of the brake pipes supplied.
- DO NOT USE metal clips to support the brake pipes or allow the brake pipes to make contact with other metal parts or foul any nuts, bolts or moving parts.

Tools Required:-

– Electric Drill / 3.5 (or 9/64) Dia Drill Bit / Pop Rivet Gun / Pipe Bending Tool /2 x 10mm Spanners / 11mm Spanner / 13mm Spanner.

Parts Required:-

– 1 x Brake Pipe Kit (see identification chart below for details).
– 1 x Brake Master Cylinder.
– "P" Clips + Pop Rivets to Suit.
– 3 x Three way Brake Pipe Connector ("T" Piece).
– 1 x Brake Light Switch and Copper Washer.

Brake Pipe Identification Chart

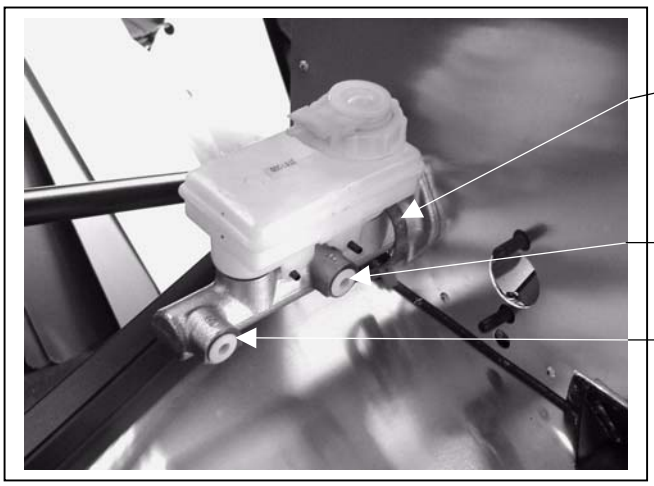
ITEM	LENGTH	FITTINGS	LOCATION
A	1300mm	Male To Male	From Brake Master Cylinder To Front `T'-Piece Assembly
B	450mm	Male To Female	From Front `T'-Piece Assembly to Off Side Front Flexi-Mount Bracket
C	450mm	Male To Female	From Front `T'-Piece Assembly to Near Side Front Flexi-Mount Bracket
D	400mm	Male To Male	From Master Cylinder To Brake Switch `T'-Piece Assembly
E	2000mm	Male To Male	From Brake Switch `T'-Piece Assembly To Rear `Three-Way' Connector
F	450mm	Male To Female	From Rear `T'-Piece Assembly to Off Side Rear Flexi-Mount Bracket
G	780mm	Male To Female	From Rear ` T'-Piece Assembly to Near Side Rear Flexi-Mount Bracket

BRAKE PIPE FITTING PROCEDURE CONTINUED

Procedure:-

- Before installing the brake pipes, the Master Cylinder and the three "T" Pieces must be attached to the Chassis in their relevant positions (see diagrams below).
- NOTE: PLEASE OBSERVE THAT MASTER CYLINDERS HAVE A PRIMARY AND SECONDARY PORT. PRIMARY PORT IS FOR THE FRONT BRAKES AND THE SECONDARY PORT IS FOR THE REAR BRAKES.

View 1 (std master cylinder)

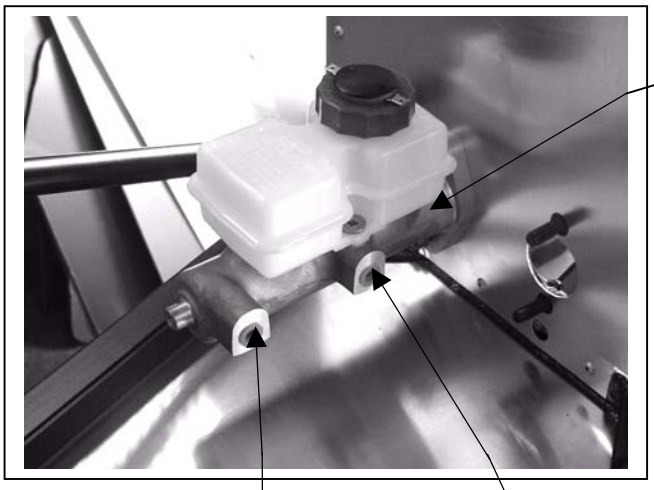


Attach Master Cylinder onto the pre-fitted studs using two M8 Nyloc Nuts.

Primary Port

Secondary Port

View 2 (A.P. Master Cylinder)

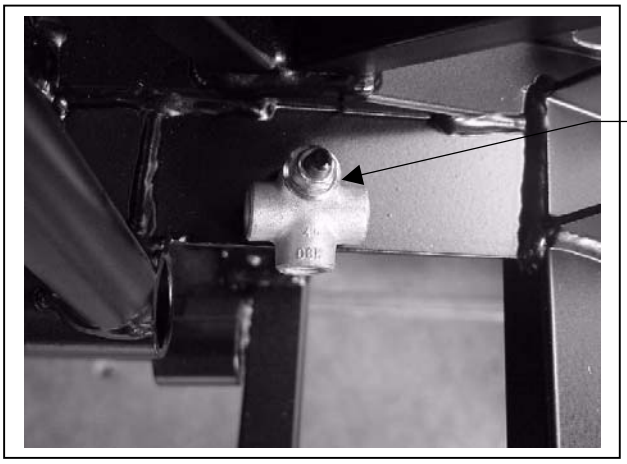


A.P. Master Cylinder is ONLY FITTED WITH FOUR POT ALLOY FRONT BRAKE CALIPERS. Attach to the same pre-fitted studs as STD Master Cylinder, but use M8 "K" Nuts instead of M8 Nyloc Nuts. "K" Nuts are available from Westfield Sports Cars.

Secondary Port Primary Port

BRAKE PIPE FITTING PROCEDURE CONTINUED

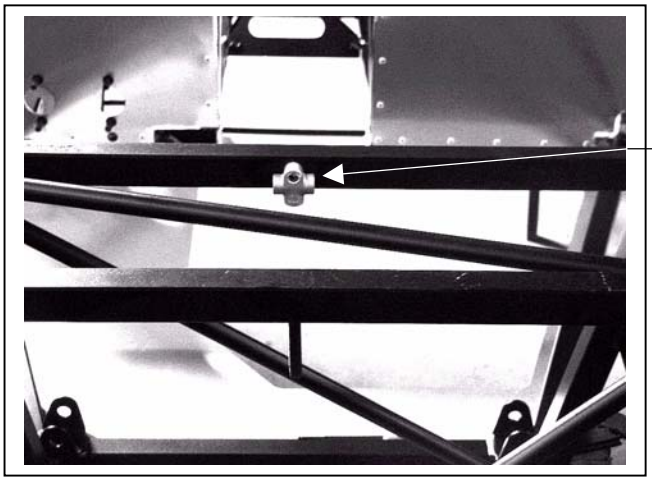
View 3



Attach Rear "T" Piece to the pre-fitted stud on rear of Chassis in the Differential Bay.
Secure using M6 Nyloc Nut and Plain Washer.

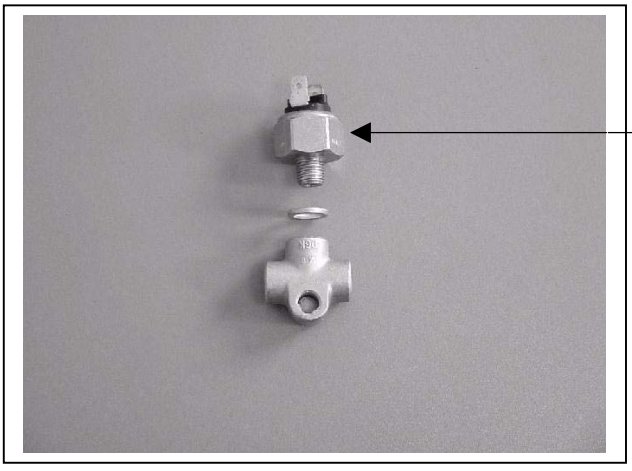
Refer to View 11

View 4



Attach Front "T" Piece to the centre of the Chassis rail by drilling a 6mm hole all the way through the Chassis rail, and secure using a M6 x 55mm Bolt 2 x Plain Washers 1 x Nyloc Nut. DO NOTOVERTIGHTEN AS THIS MAY DAMAGE CHASSIS.

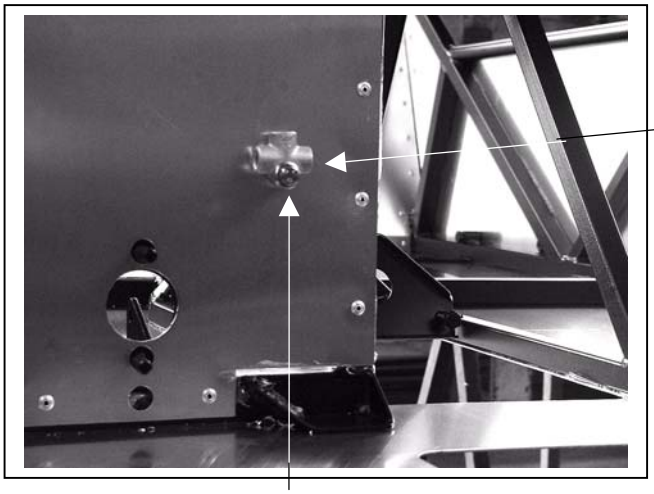
View 5



Fit Brake Light Switch to "T" Piece using Copper washer provided before securing it to Chassis.

BRAKE PIPE FITTING PROCEDURE
CONTINUED

View 6



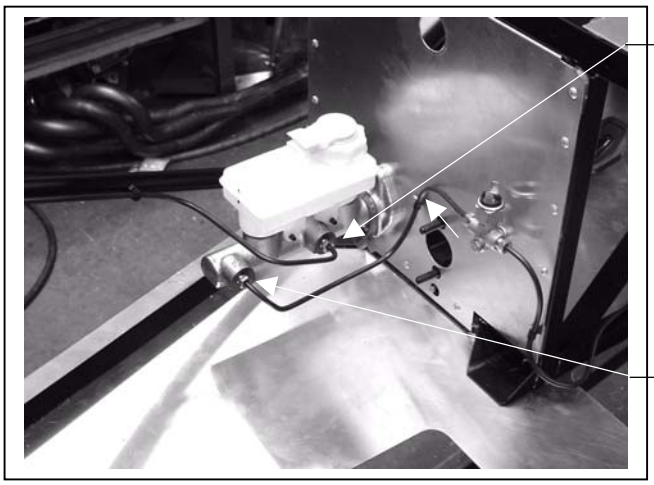
Attach Brake Light Switch and "T" Piece to Chassis by drilling a 6mm hole in the Aluminium Panel.
It will be necessary to space the "T" Piece away from Aluminium Panel by using 2 or 3 Plain Washers
Secure using M6 x 40mm Bolt and M6 Nyloc Nut

Measurements are 65mm in from Tunnel Edge and 160mm from Floor Panel.

NOTE: Below are a series of Diagrams showing the routing of the Brake Pipes. Each pipe is lettered please refer to Brake Pipe Identification Chart for the relevant information.

→ Denotes approximate fixing points.

View 7

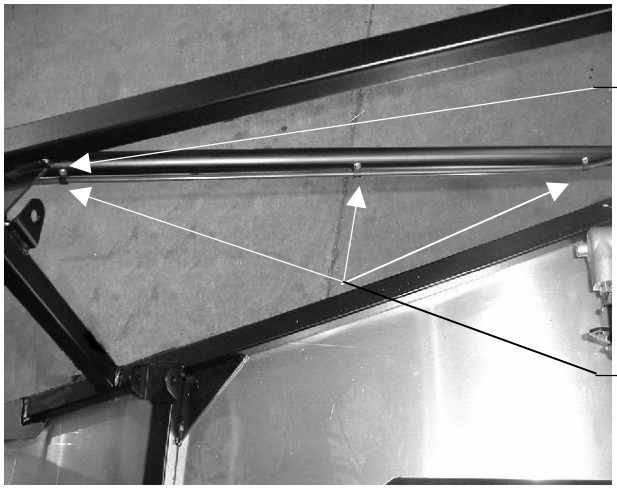


Brake Pipe "A" runs up Inside of diagonal tubular Chassis Rail to Front "T" Piece.
See diagram 8

DO NOT run Brake Pipe "D" too close to Aluminium Floor Panel, leave enough room for Lower Engine Frame to pass underneath it.

BRAKE PIPE FITTING PROCEDURE CONTINUED

View 8



At top of tubular Chassis Brake Pipe “A” runs underneath the Top Chassis Rail.
See diagram 9.

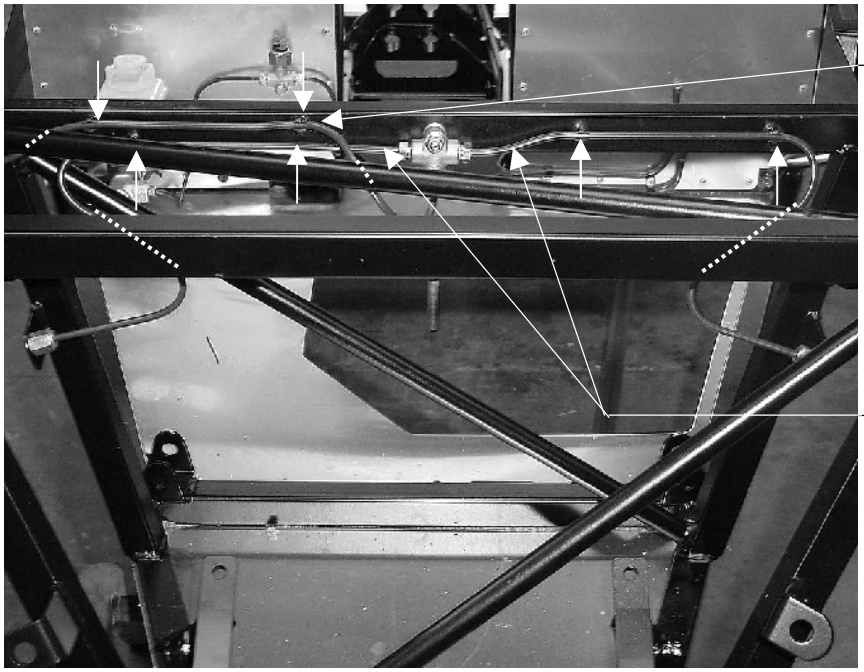
Use three fixings points equally spaced.

View 9

Run pipe “A” along top of Chassis Rail to “T” Piece.
As in Diagram 10.

BRAKE PIPE FITTING PROCEDURE CONTINUED

View 10

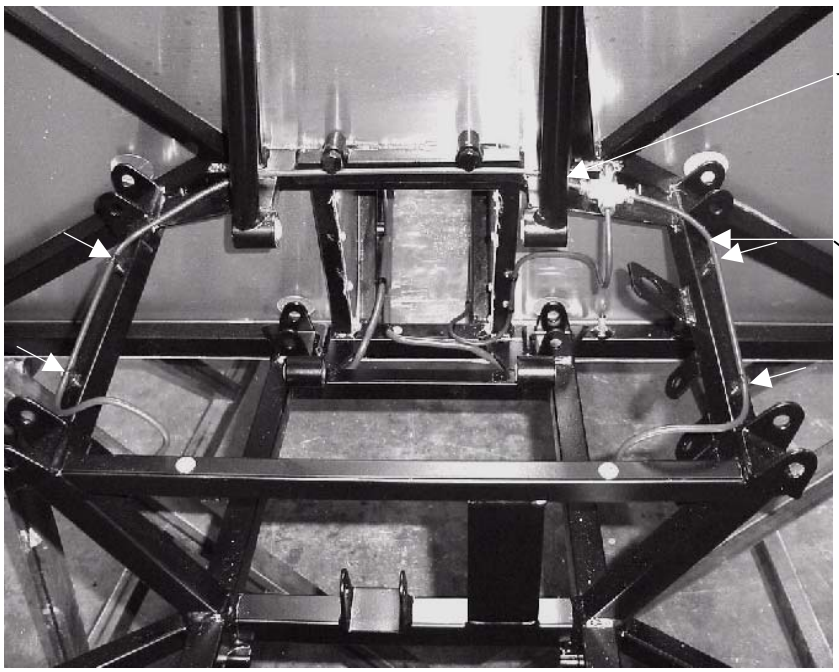


Brake Pipe "A" runs over the top of Brake Pipe "B" and Bends round and Down into bottom Of "T" Piece

Brake Pipe "B" and "C" bend in an "S" shape to meet front Flexi-Mounts.

→ Denotes Fixing Points

View 11



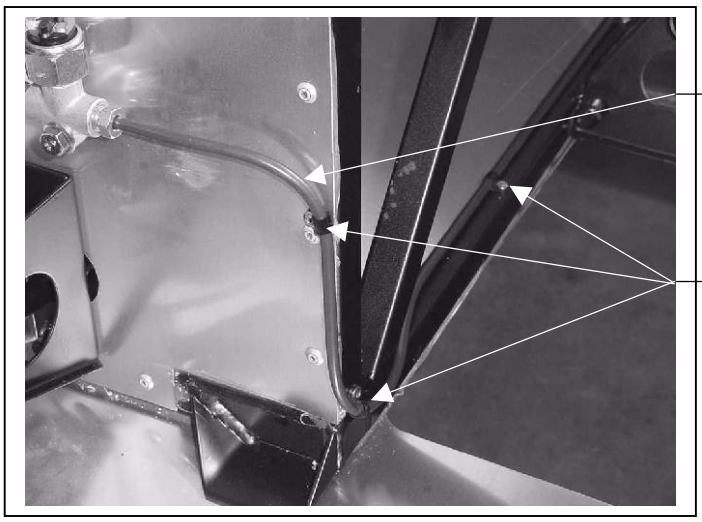
Brake Pipe "G" Run to near side Flexi-Mount.

Brake Pipe "F" Run to off side Flexi-Mount.

→ Denotes Fixing Points

BRAKE PIPE FITTING PROCEDURE
CONTINUED

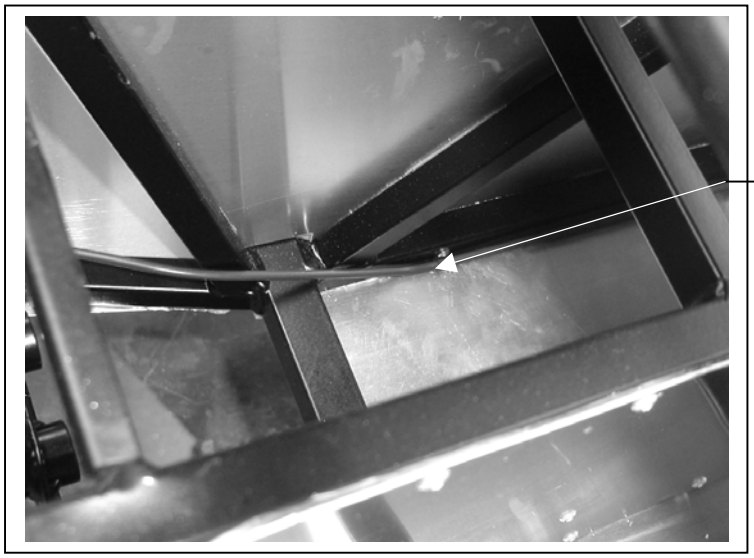
View 12



Brake Pipe "E" runs from Brake Light Switch "T" Piece up Drivers Side of Tunnel to rear "T" Piece.

Fixings Points.

View 13

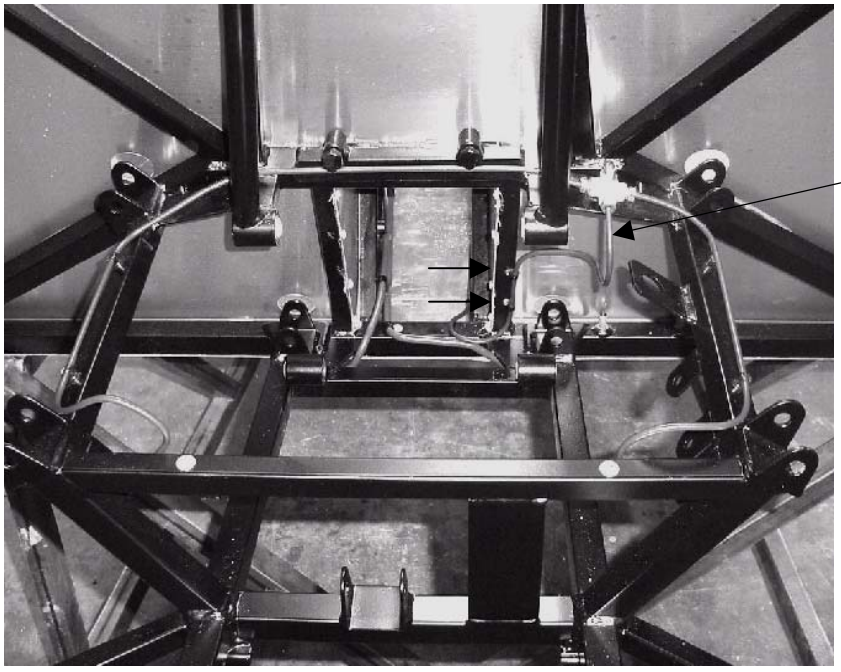


Continue to run Brake Pipe "E" up Drivers Side of tunnel. If unable to drill pipe here then Brake Pipe "E" can be run on top Of this Chassis Rail.

Use four equally spaced Fixing Points.

BRAKE PIPE FITTING PROCEDURE
CONTINUED

View 14



Do Not Make Loop on Brake Pipe "E" too big as it may foul or run close to Driveshaft.

→ Denotes Fixing Points.

NOTE: Please make sure that all connections into Brake Pipe "T" Pieces are tight.

FLOOR MOUNTED PEDALS
FITTING PROCEDURE

Tools Required:-

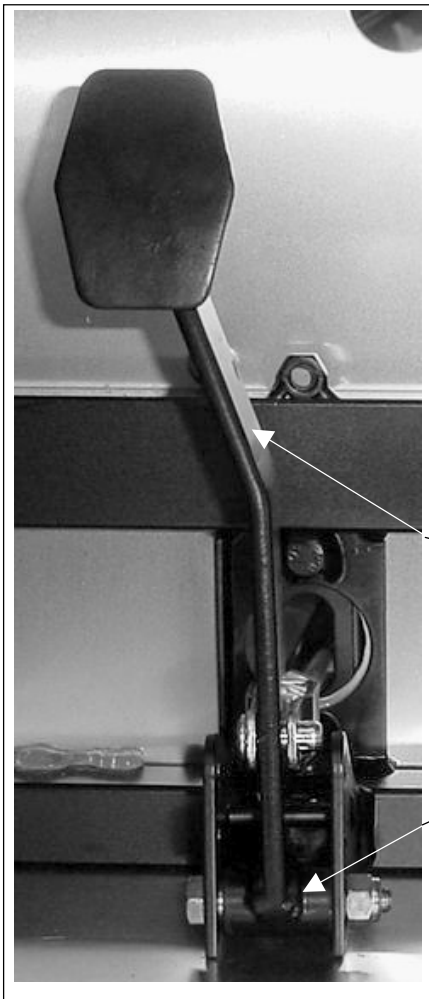
– 2 x 13mm Combination Spanners / 2x 10mm Combination Spanners / Long Nosed Pliers / Electric Drill / 6.5mm Drill Bit / 4.1mm Drill Bit / Pop Rivet Gun / Side Cutters

Parts Required:-

– Throttle Pedal / Brake Pedal / Clutch Pedal (all Pedals are fitted with '12DU' bearing bushes as standard) / 2 x Long Pedal Pivot Bush / 1 x Short Pedal Pivot Bush / 2 x Clevis Pins x 20mm Long / 2 x Split Pins / 2 x Pedal Rubbers / 1 x Clutch Master Cylinder Kit Complete / 1 x Throttle Cable / 1 x Brass Trunion
– 1 x M8 x 65mm 1 x M8 x 60mm / 1 x M8 x 55mm / 1 x M8 x 50mm / 1 x M8 x 45mm Bolts
– 3 x M8 Nyloc Nuts / 2 x M8 Plain Nuts

Procedure:-

View 1



View 2 (Steel Spacer Pivot Bush)

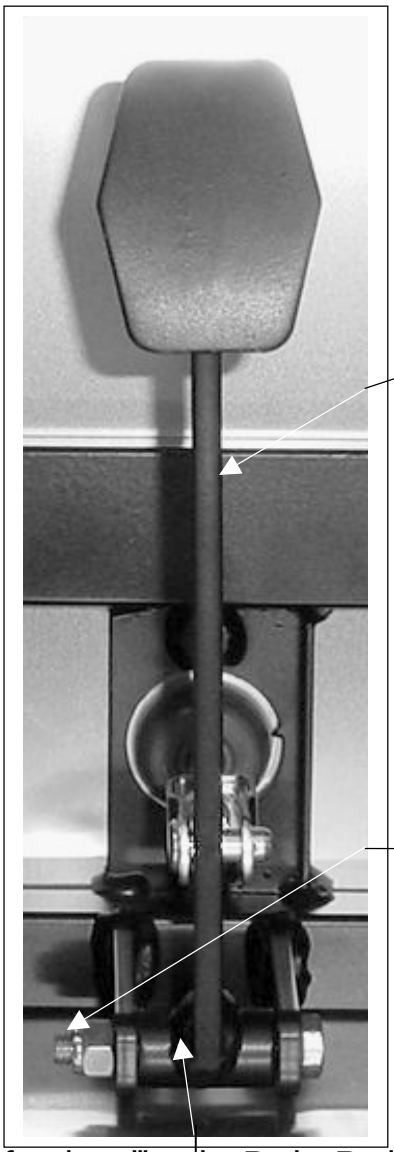
Note:- Brake and Clutch Pivot Bushes are the same length.

Clutch Pedal is offset towards the Left Hand side.

Before installing the Clutch Pedal lubricate the Steel Spacer Bush with 'Copper Slip' and insert into the pedal assembly.
Secure the Clutch Pedal to the Lower Left Hand Pedal Support Bracket using the M8 x 50mm Bolt and Nyloc Nut
DO NOT OVERTIGHTEN NUT as the Pedal MUST have free movement.

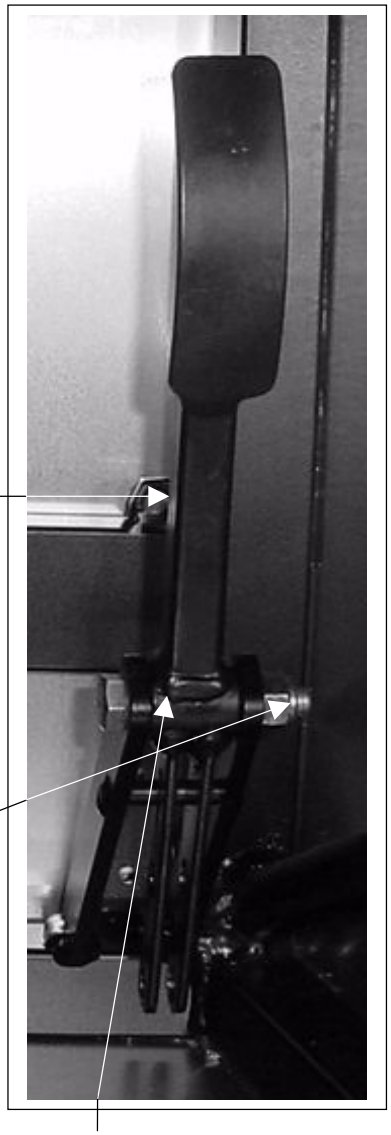
FLOOR MOUNTED PEDAL FITTING PROCEDURE CONTINUED

View 3



Before installing the Brake Pedal lubricate the Steel Spacer Bush with 'Copper Slip' and insert into the pedal assembly. Secure the Brake Pedal to the Central Pedal Support Bracket using the M8 x 55mm Bolt and Nyloc Nut DO NOT OVERTIGHTEN NUT as the Pedal MUST have free movement.

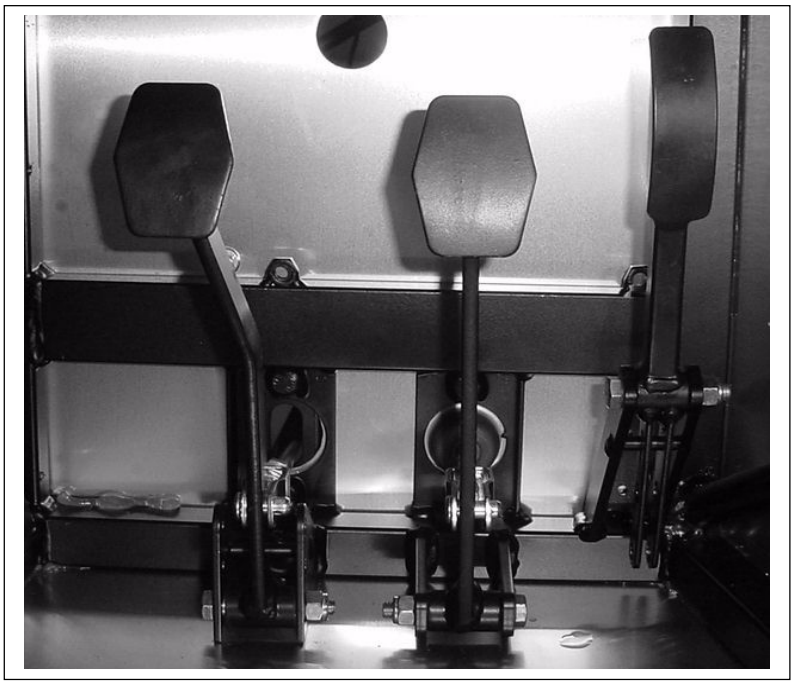
View 4



Before installing the Accelerator Pedal lubricate the Steel Spacer Bush with 'Copper Slip' and insert into the pedal assembly. Secure the Accelerator Pedal to the Right Hand Pedal Support Bracket using the M8 x 45mm Bolt and Nyloc Nut DO NOT OVERTIGHTEN NUT as the Pedal MUST have free movement.

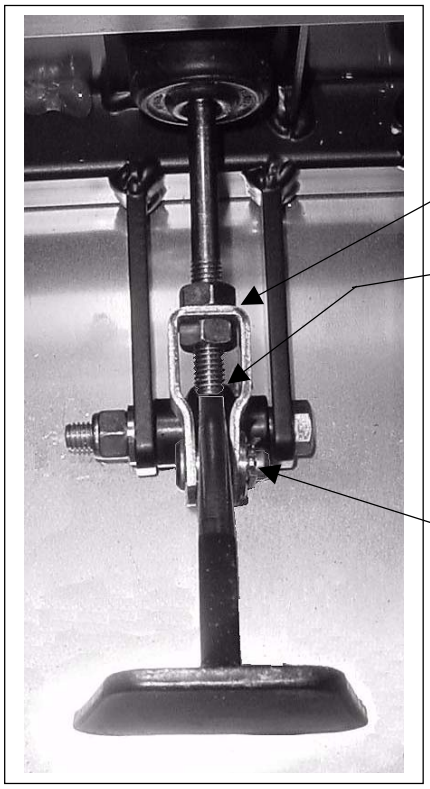
FLOOR MOUNTED PEDAL FITTING PROCEDURE CONTINUED

View 5



Pedal arrangement
In Footwell.

View 6



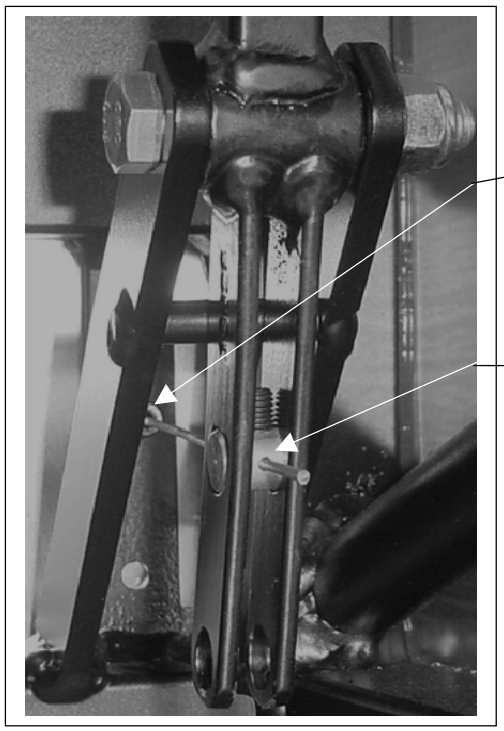
Attach clevis onto Brake Master Cylinder Push Rod Using two Plain Nuts either side of the clevis to act as lock nuts.

Always check for clearance between Pedal and Push Rod.

Attach clevis onto the Brake Pedal through the pre-drilled hole in Pedal. Secure using an M8 Clevis Pin and a Split Pin which passes through the hole in the Clevis Pin.
NOTE:- An M8 washer will be needed in-between the Clevis and the Split Pin.

F LOOR MOUNTED PEDAL FITTING PROCEDURE CONTINUED

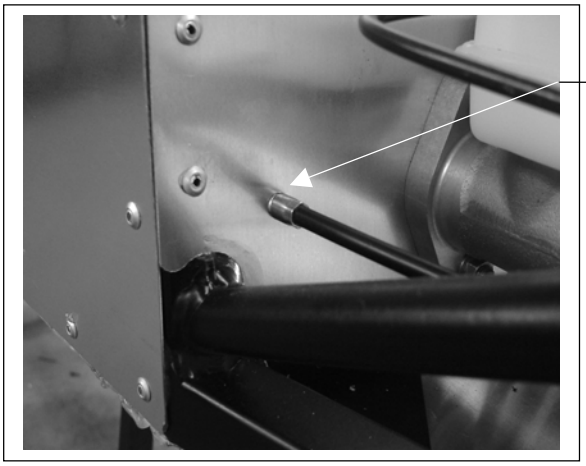
View 7



Drill a 6.5mm hole through the Aluminum Panel to allow Throttle Cable outer to locate into panel See View 8. WARNING DO NOT DRILL OVERSIZE.

Insert Brass Trunion through upper hole on Throttle Pedal and pass Throttle Cable inner through Trunion. DO NOT TIGHTEN GRUB SCREW ON TRUNION UNTIL CABLE IS ATTACHED ONTO ENGINE.

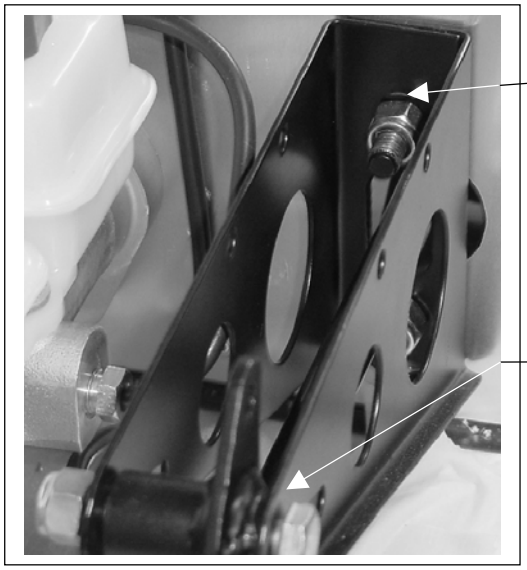
View 8



Use straight end of Throttle Cable Outer.

FLOOR MOUNTED PEDAL FITTING
PROCEDURE CONTINUED

View 9



Attach the two Clutch Master Cylinder Brackets onto the chassis using the pre-fitted studs. Secure using two M8 Nyloc Nuts.

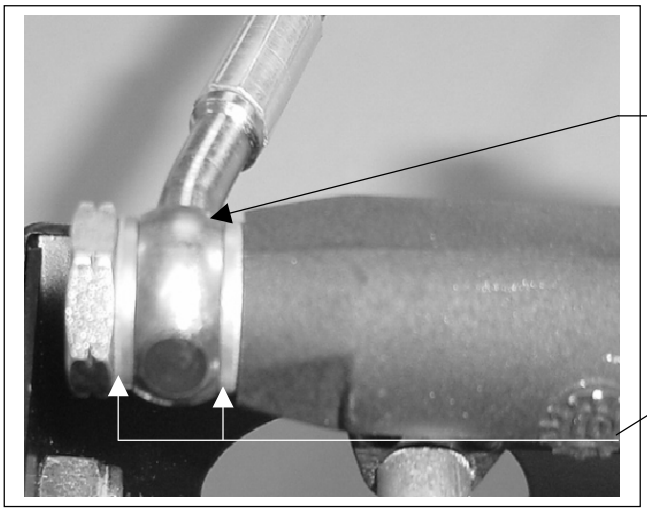
NOTE:
The two brackets are separate from each other and will have to be overlapped. PLEASE MAKE SURE THAT HOLES FOR QUADRANT PIVOT LINE UP OK.

View 10

Before installing the Quadrant onto the Brackets lubricate the Steel Pivot Bush With 'Copper Slip' and secure using an M8 x 45mm Bolt and Nyloc Nut.
DO NOT OVERTIGHTEN NUT as Quadrant MUST have free movement.

FLOOR MOUNTED PEDAL FITTING PROCEDURE CONTINUED

View 11



Before attaching the Clutch Master Cylinder to the Brackets the Aeroquip Banjo must be fitted to the Clutch Master Cylinder.

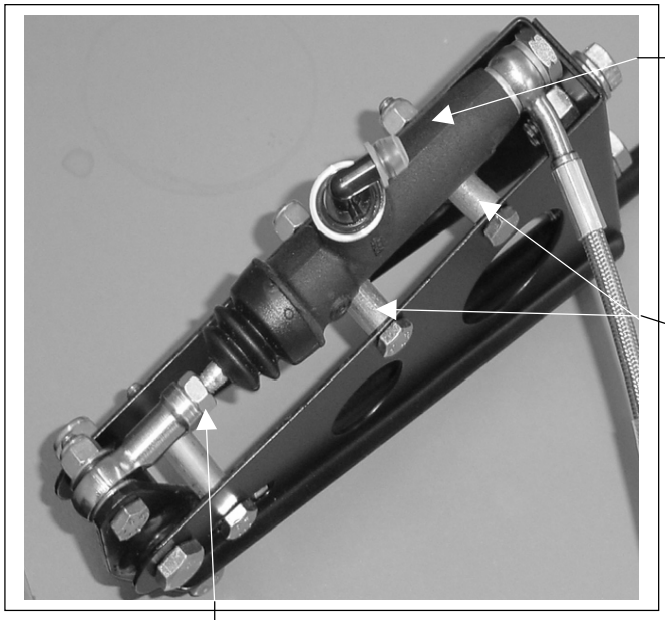
NOTE:

Use a 'Copper Washer' either Side of the Banjo.

Use a METRIC Banjo Bolt in the Master Cylinder, this is denoted by slots in the head of the Banjo Bolt.

NOTE: The other end of the Aeroquip will be connected later to the Clutch Slave Cylinder when engine has been installed, using the IMPERIAL Banjo Bolt which has no slots in the head of the bolt and the other two 'Copper Washers'.

View 12



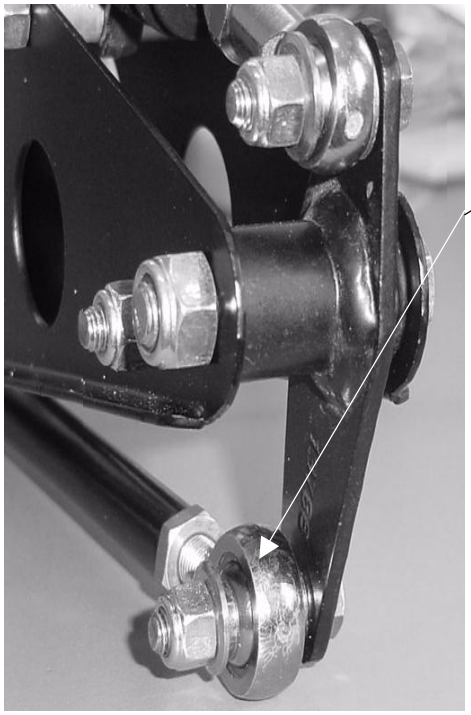
Install the Clutch Master Cylinder to the brackets using Two M6 x 45mm Bolts and two M6 Nyloc Nuts.

A spacer must be used either side of the Clutch Master Cylinder.

Thread the M6 plain nut onto the Pushrod and then thread into the Rod End. The Pushrod then pushes into the Rubber Boot of the Master Cylinder.Attach the Rod End to the Quadrant using anM6 x 25mm Bolt and Nyloc Nut it will be necessary to put a Washer either side of the Rod End.

FLOOR MOUNTED PEDALS FITTING PROCEDURE CONTINUED

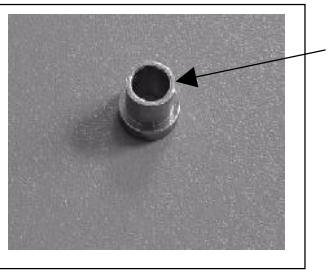
View 13



Screw the 5/16 Rod End and a Lock Nut into the Push Rod and attach it to To the bottom of the Quadrant using An M6 x 30mm Bolt and a Plain Washer Next to the Nyloc Nut.

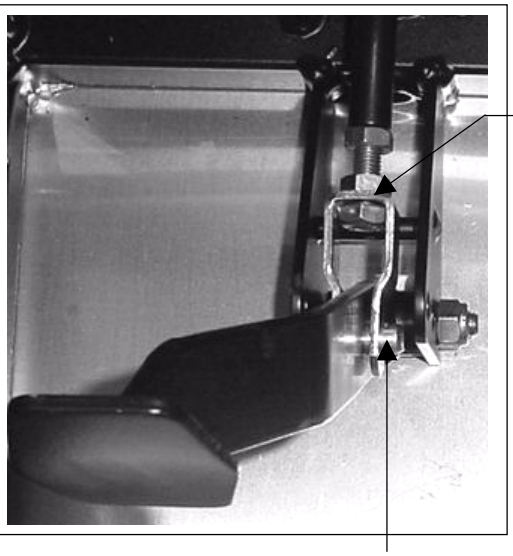
NOTE:

The Push Rod to the Pedal is attached To the longer side of the Quadrant.



Make sure That sleeves are pushed into Rod End before connecting it to the Quadrant.

View 14



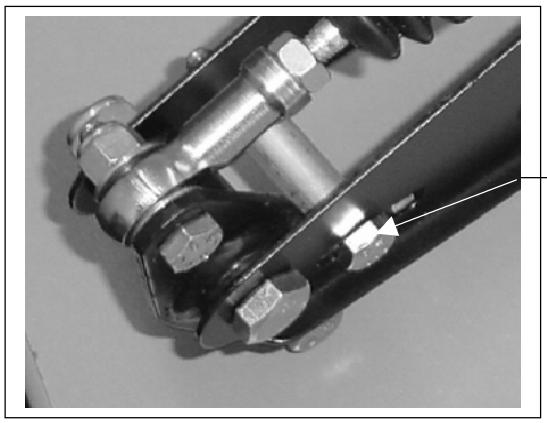
The other end of the Push Rod is connected to the Clutch Pedal via a Clevis. This is attached by using an 5/16 Bolt and two Lock Nuts. Push the 5/16 Bolt through the Clevis and then thread the two Lock Nuts onto the Bolt The one Lock Nut goes up against the Clevis and the other one will lock up against the Push Rod when the pedal has been finally adjusted.

Attach clevis onto the Clutch Pedal through the pre-drilled hole in Pedal.
Secure using an M8 Clevis Pin and a Split Pin which passes through the hole in the Clevis Pin.

NOTE:- An M8 washer will be needed in-between the Clevis and the Split Pin

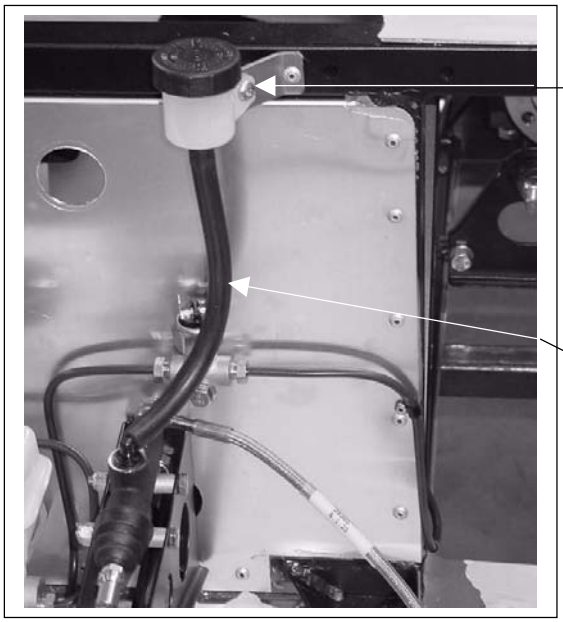
FLOOR MOUNTED PEDALS FITTING PROCEDURE CONTINUED

View 15



The two slots just behind the fixing point for the quadrant are for the pedal stop. If this is not fitted then the pedal will drop backwards towards the floor. Fit the Aluminum spacer using an M6 x 45mm Bolt and Nyloc Nut. Tighten when Pedal has been finally adjusted.

View 16



Attach Reservoir mounting bracket to Upper Chassis Rail using two 4.1mm Pop Rivets. Then Secure the Reservoir to the bracket using a M5 x 12mm Button Head Bolt and Nyloc

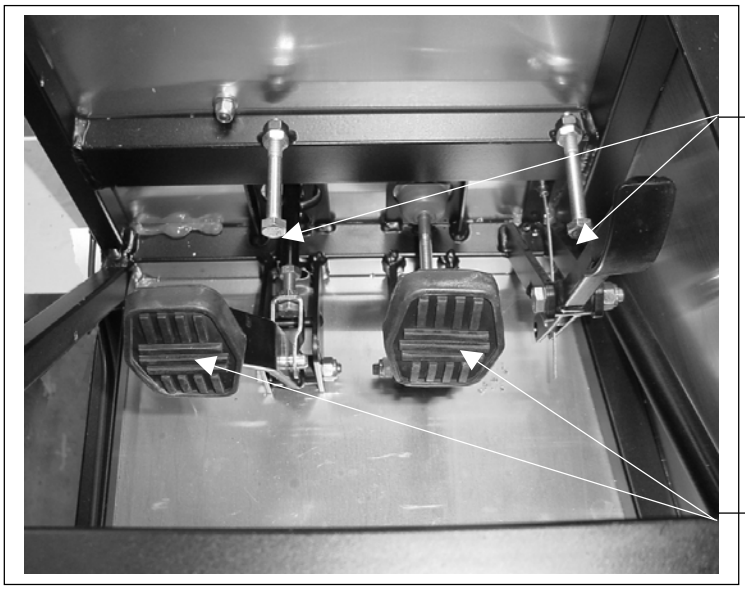
Attach the Rubber Pipe to the Master Cylinder and the other end to the Reservoir. THE PIPE WILL HAVE TO BE CUT TO LENGTH.

FLOOR MOUNTED PEDALS FITTING PROCEDURE CONTINUED

View 17

View of Clutch Master Cylinder installed onto chassis.

View 18



Fit the Pedal Stops to the Chassis using the pre-fitted nuts on the chassis. Use the M8 x 60mm Bolt and lock nut for the Clutch and the M8 x 65mm Bolt and lock nut for the Throttle.
Final adjustment for the pedal Stops can be made when both Throttle and Clutch have been connected to the engine.
Fit pedal rubbers to Brake and Clutch Pedals (SVA Requirement).

NOTE:

Please check that all Bolts and Lock Nuts are tight.

CHASSIS WIRING LOOM
FITTING PROCEDURE

© IT IS RECOMMENDED THAT YOU ALWAYS USE THE WESTFIELD CHASSIS WIRING LOOM.

© DO NOT USE metal clips to support the wiring loom or allow the wiring loom to make contact with any moving parts or sharp edges.

Tools Required:-

– Electric Drill / 4.1 Dia Drill Bit / Pop Rivet Gun / 1" Masking Tape / Fine Pointed Marker Pen / Side Cutters / 3mm Allen Key / M8 Combination Spanner

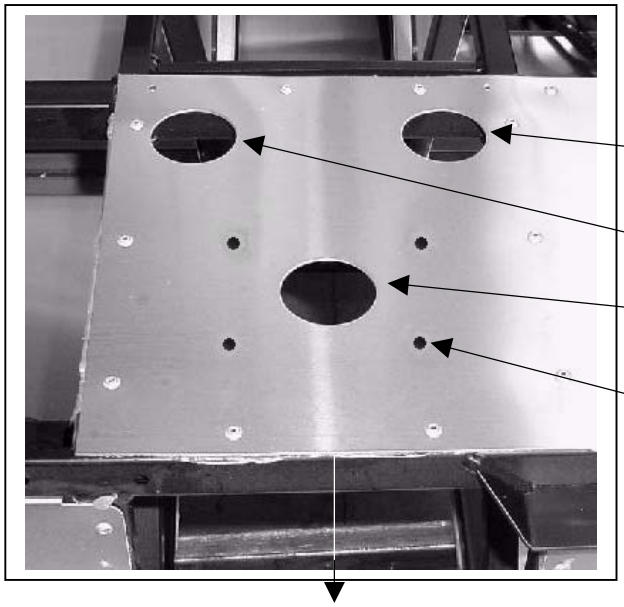
Parts Required:-

– Westfield Chassis Loom / Loom Saddles / 4.1 x 10mm Dia Closed Pop Rivets / Cable Ties / 4 x M5 x 25mm Button Head Screws / 4 x M5 Nyloc Nuts / 4 x M5 Plain Washers / 4 x Aluminum Spacers / 1" Foam Tape

Procedure:-

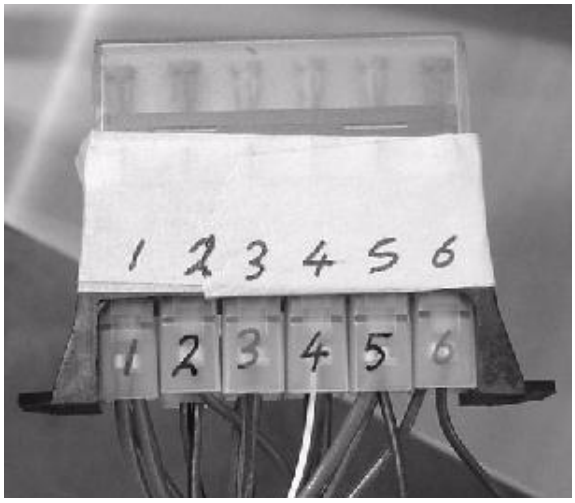
NOTE: The wiring loom in the following section was fitted to a chassis without any brake pipes or fuel pipes attached to it for clarity.

View 1



CHASSIS WIRING LOOM FITTING PROCEDURE CONTINUED

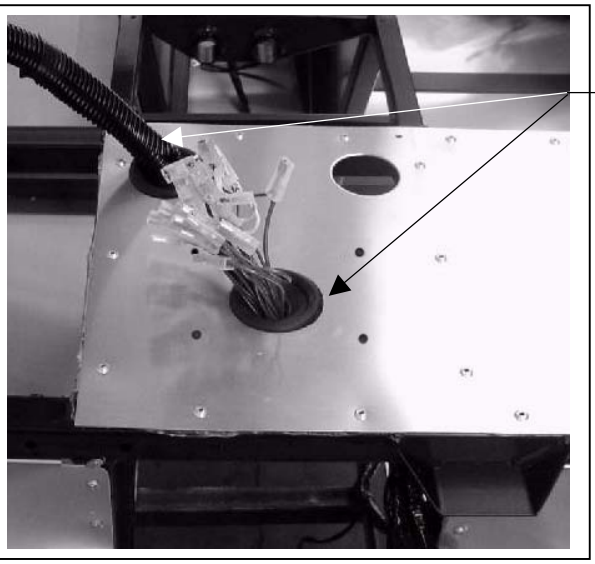
View 2



Before fitting the fuse boxes to the chassis the wires / connectors must be removed, as the fuse boxes will not pass through the 1 ¾" hole in top bulk head panel. MAKE sure that the fuse boxes and the connectors are labelled before removing them. This can be done by wrapping 1" Masking Tape around the fuse boxes and marking them as in View 2.

Label fuse boxes and connectors either 1 – 24 or A – X to avoid confusion.

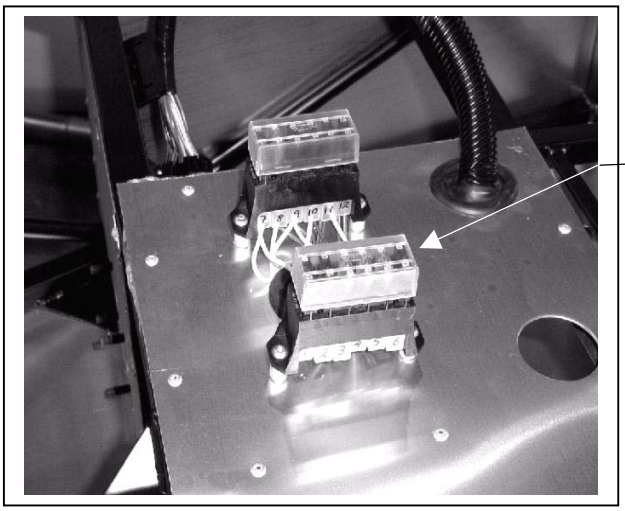
View 3



Insert the fuse box wires and dashboard wires through the relivant holes and fit Rubber Grommets into place.
Be carefull not to damage any of the fuse box wires when passing them through the hole in the aluminum panel.

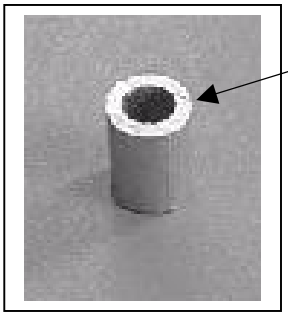
CHASSIS WIRING LOOM FITTING PROCEDURE CONTINUED

View 4



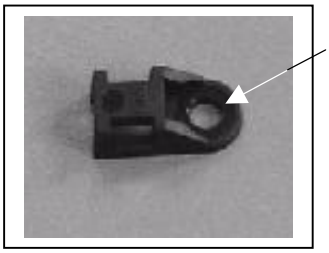
Connect the wires back onto the fuse boxes in their relevant positions. Secure the fuse boxes to the bulk head panel using 4 x Spacers (see view 5) 4 x M5 x 25mm Button Headed Screws 4 x Plain Washers and 4 x Nyloc Nuts. The washers and nyloc nuts attach underneath the bulk head panel.

View 5



Aluminum fuse box spacer 13mm approx in length.

View 6



The loom is attached to the chassis by using Loom Saddles, which are pop riveted into place using 4.1mm x 10mm Dia pop rivets.
See the following Views for the fixing points of the Loom Saddles and the routing of the wiring loom.

NOTE: The loom saddle fixing points are denoted by a white cable tie around the loom.

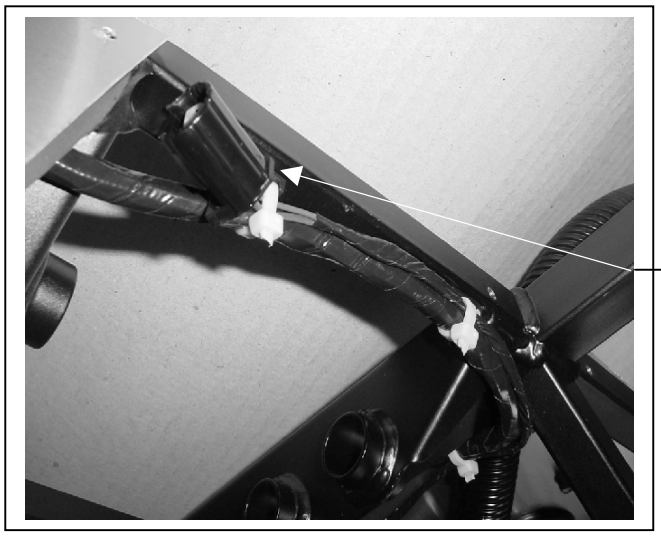
CHASSIS WIRING LOOM FITTING PROCEDURE CONTINUED

View 7

Attach four loom saddles under the bulk head panel as in view 7.
Once the loom saddles have been fitted attach the main part of the loom here.
Run the rear part of the loom around the chassis rail and under the upper reverse box mount.
Make sure that loom is kept tight into this corner to leave enough room for engine loom when fitted later.

Attach Foam Tape to avoid chaffing on reverse box mount.

View 8

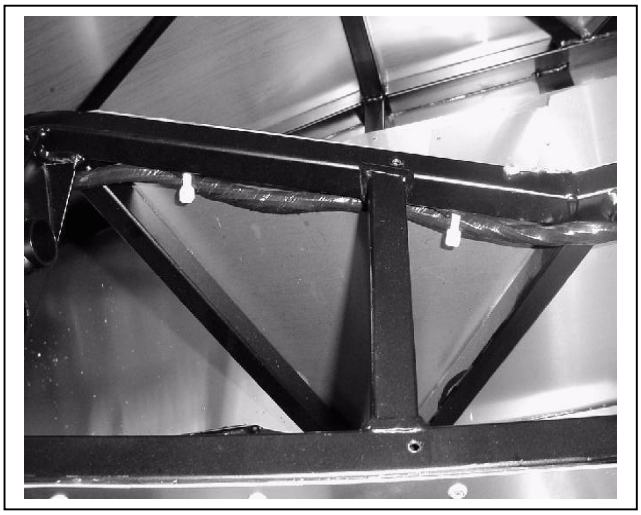


Attach two loom saddles between the two upper reverse box mounts and continue running the rear loom down the drivers side of the tunnel.

The reverse light plug can also be tied up with the loom as it is not needed in this application.

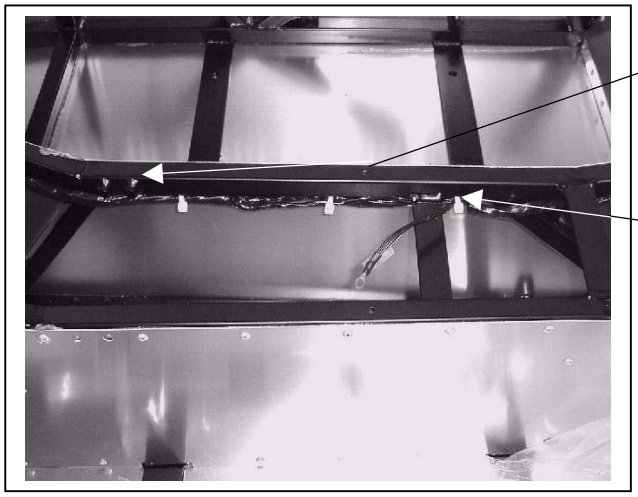
CHASSIS WIRING LOOM FITTING PROCEDURE CONTINUED

View 9



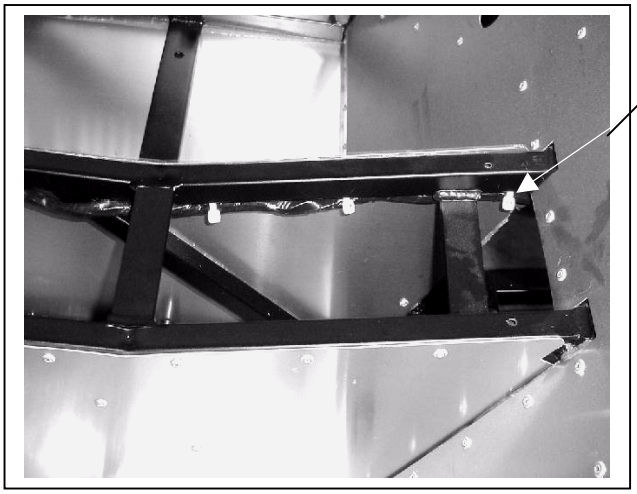
Continue to run the rear loom down the drivers side of the tunnel.

View 10



Make sure that the loom is kept tight into chassis by where the gear change will mount.
Pass loom under the handbrake mounting plates and cable tie the handbrake warning light wires back so as they come out just behind the forward handbrake mounting plate.

View 11



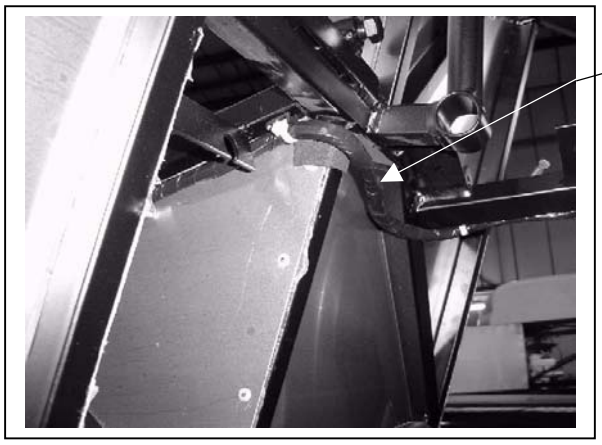
Before securing loom to the last loom saddle place a piece of foam tape around corner of chassis.
See View 12

CHASSIS WIRING LOOM FITTING PROCEDURE CONTINUED

View 12

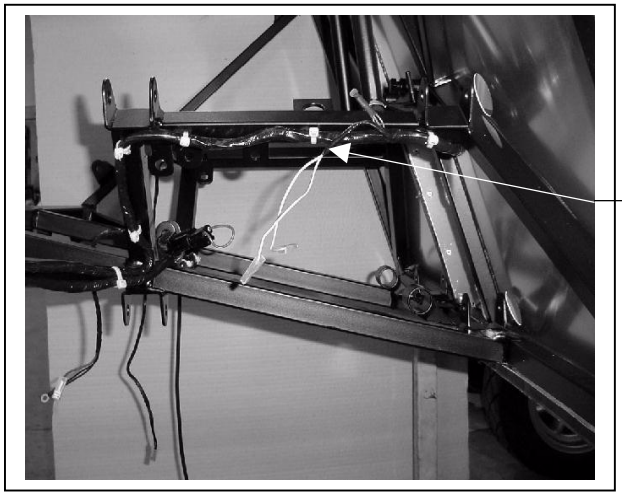
Attach foam tape around corner of chassis here to prevent chaffing.

View 13



Run loom over the top of brake pipe.

View 14



Attach loom to the outer chassis rails of the differential bay.

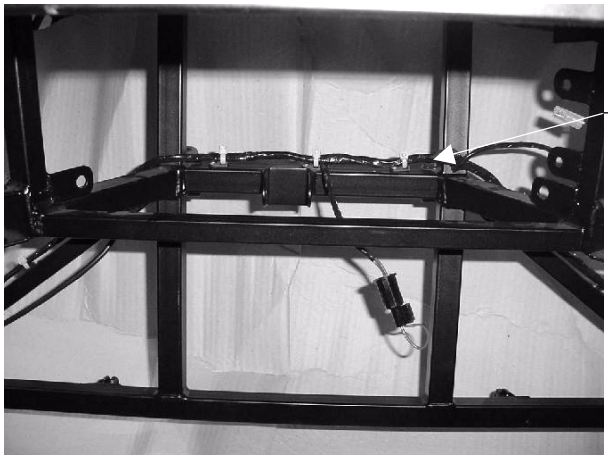
Speedo Transducer wires can be left loose as these will be attached later.

CHASSIS WIRING LOOM FITTING PROCEDURE CONTINUED

View 15

Attach the loom to the diagonal chassis rail that runs to the rear of the chassis (Drivers Side). Leave about 2-3" of wire with the 6 and 2 way plugs on the end hanging over the end of the chassis. Then double the loom back on its self to run along chassis rail behind differential. See View 16.

View 16



Attach loom along the inner chassis rail of the differential bay underneath the differential stabilizing bracket.
Innertia switch wires can be left loose as these will be attached later.

View 17

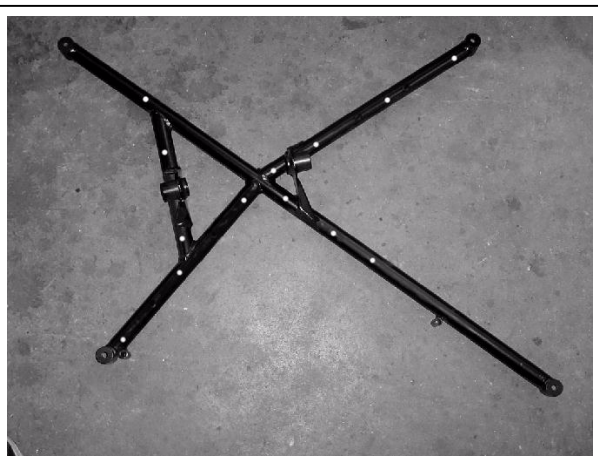
Attach the Fuel Tank Sender wires to the vertical chassis rail using two loom saddles, the rest of the Tank Sender wiring can be left loose as this will be attached to the fuel tank later. Attach the remaining loom with the 6 & 2 way plugs on the end to the other diagonal chassis rail that runs to the rear of the chassis. The Number Plate Lamp wires can be left loose as these will be attached later.

CHASSIS WIRING LOOM FITTING PROCEDURE CONTINUED

View 18

The rest of the loom at the front into the Engine Bay will be attached later to the engine frame, when the frame and engine have been fitted.

View 19



Attach loom saddles to the under-neath of the upper engine frame before it is attached to the engine.

NOTE: White dots on engine frame in view represent approximate fitting points for loom saddles.

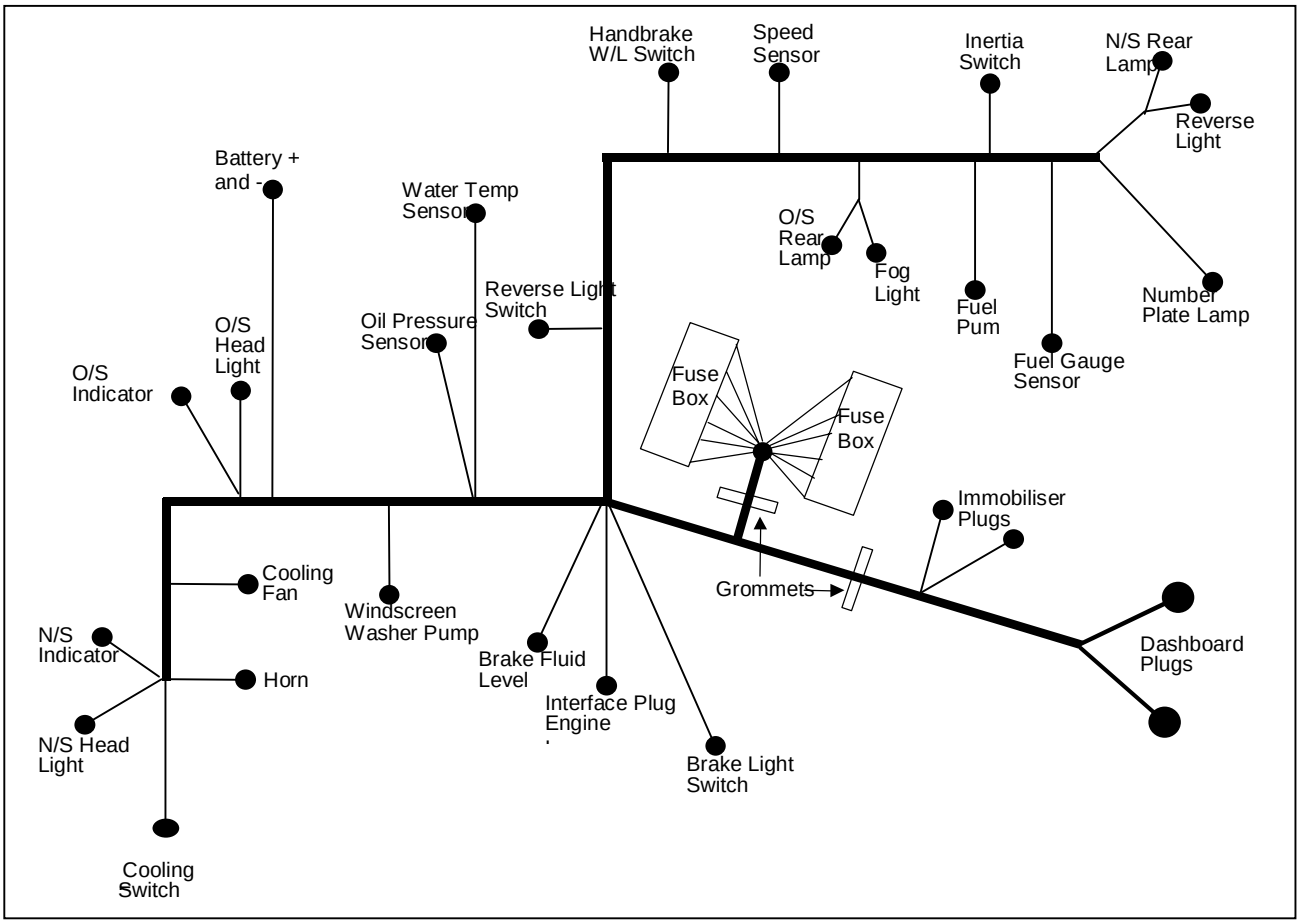
View 20

Attach 4 loom saddles to the under neath of the upper front chassis rail.

Attach 3 loom saddles to the inside of the two upper chassis rails. Approx positions denoted by white dots on chassis.

The wiring loom will be fitted to these loom saddles when the engine and frame have been installed.

WIRING LOOM CONNECTOR IDENTIFICATION



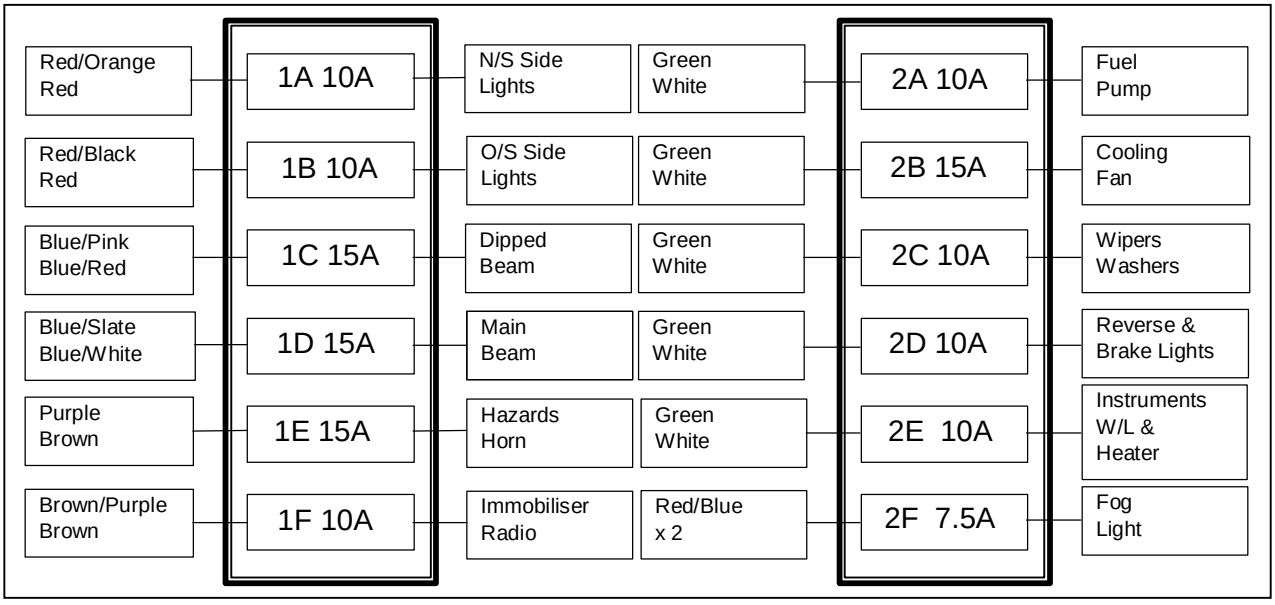
NOTE: Below are a list of connectors and their corresponding wire colours, the Dashboard connectors colours have not been listed as they can only connect one way into the dash loom.

COOLING FAN SWITCH = Black/Green - Green
N/S HEAD LIGHT = Black – Red/Orange – Blue/Slate – Blue/Pink
HORN = Purple/Black – Black
N/S INDICATOR = Green/Red – Black
COOLING FAN = Black/Green – Black
O/S INDICATOR = Green/White – Black
O/S HEAD LIGHT = Black – Red/Black – Blue/Slate – Blue/Pink
BATTERY = Brown(positive) – Black(negative)
WINDSCREEN WASHER PUMP = Light Green Black – Black
OIL PRESSURE SENSOR = White/Brown
WATER TEMP SENSOR = Green/Blue
BRAKE FLUID LEVEL = Black – Black/White
INTERFACE PLUG = White – White/Black – Orange – White/Red
BRAKE LIGHT SWITCH = Green – Green/Purple

WIRING LOOM CONNECTOR IDENTIFICATION CONTINUED

IMMOBILISER PLUG 1 = White/Red x 2 – Green x 2 – White x 2 (make sure that mating half of plug with 3 loops of wire is not missing)
IMMOBILISER PLUG 2 = Brown/Purple – Green - Black
REVERSE LIGHT SWITCH = Green – Green/Brown
HANDBRAKE W/L SWITCH = Black – Black/White
SPEED SENSOR = Yellow/Green – Yellow/White
O/S REAR LIGHT = Red/Black – Green/Brown – Green/White – Green/Purple – Black
FOG LIGHT = Red/Blue – Black
FUEL PUMP = Green – Black
INERTIA SWITCH = Green x 2
FUEL GAUGE SENSOR = Green/Black – Black
N/S REAR LIGHT = Red/Orange – Red/Blue – Green/Red – Green/Purple – Black
REVERSE LIGHT = Green/Brown – Black
NUMBER PLATE LIGHT = Red/Black - Black

FUSE IDENTIFICATION



FREELANDER DIFFERENTIAL FITTING PROCEDURE

© It is recommended that you use a Differential fitted with a Limited Slip package purchased from Westfield Sport Cars, as the Freelander Differential is not fitted with a Limited Slip package as standard.

© Use an EP80 Hypoid Gear Oil (1 Litre approx). THIS ONLY APPLIES WHEN USING A DIFFERENTIAL PURCHASED FROM WESTFIELD SPORTS CARS

Tools Required:-

– Torque Wrench / 19mm Socket / 19mm Combination Spanner / 3/8 Drive Ratchet / 8mm Socket Drive Allen Key / Medium Sized Engineering Hammer / Medium Sized Round File

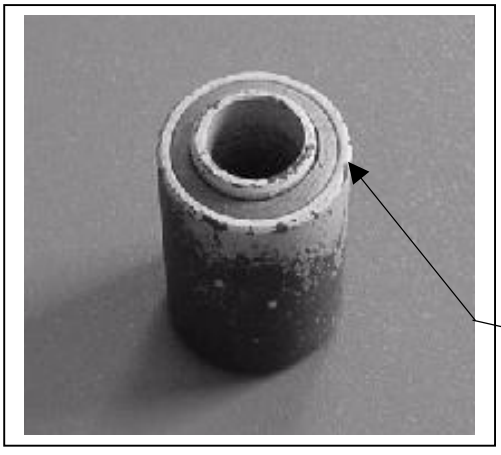
Parts Required:-

– Freelander Differential / L/H and R/H Differential Mounting Brackets / 1 Litre (approx.) EP 80 Hypoid Gear Oil / Differential Breather / L/H and R/H Driveshafts

– 3 x M12 x 65mm Bolts / 1 x M12 x 80mm Bolt / 4 x M10 x 30mm Socket Cap Screws / 2 x M10 x 45mm Socket Cap Screws / 6 x M10 Spring Washers / 6 x M10 Plain Washers / 8 x M12 Plain Washers / 4 x M12 Nyloc Nuts / 3 x 17mm x 16mm O/D Spacers / Cable Ties.

Procedure:-

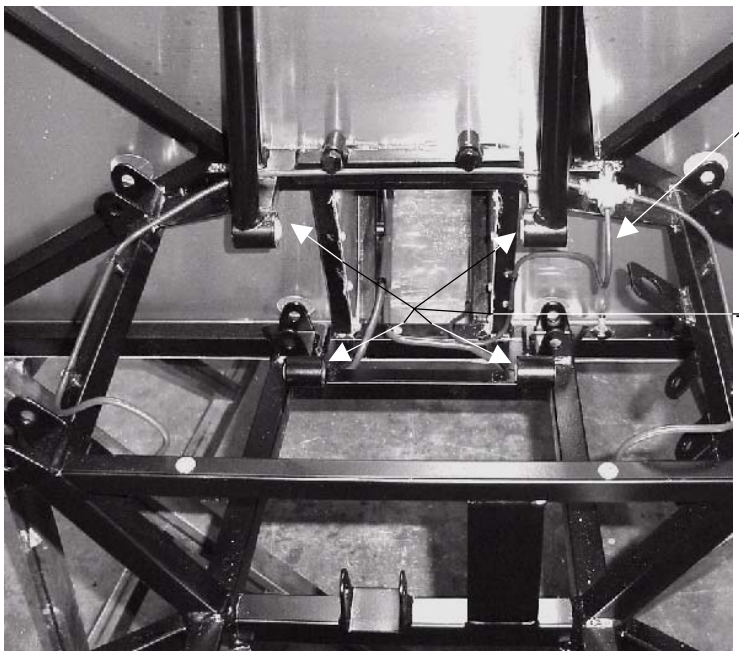
View 1



Before installing the 4 Differential Bushes make sure that powder coating is removed from bush housing on chassis. Apply 'Copper to bush to ease installation into housing. See View 2. Differential Bushes are denoted by White Paint.

FREELANDER DIFFERENTIAL FITTING PROCEDURE CONTINUED

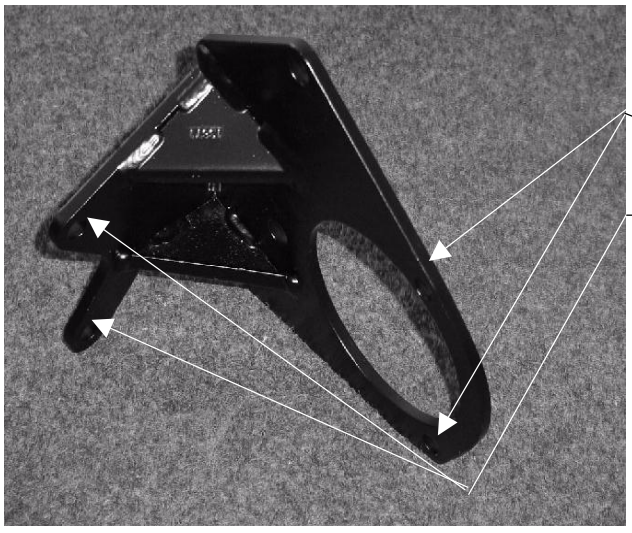
View 2



WARNING BE CAREFULL NOT TO DAMAGE BRAKE PIPE WHEN FITTNG BUSHES.

It may be necessary to drift the bushes into the housings using a Hammer and a block of wood.

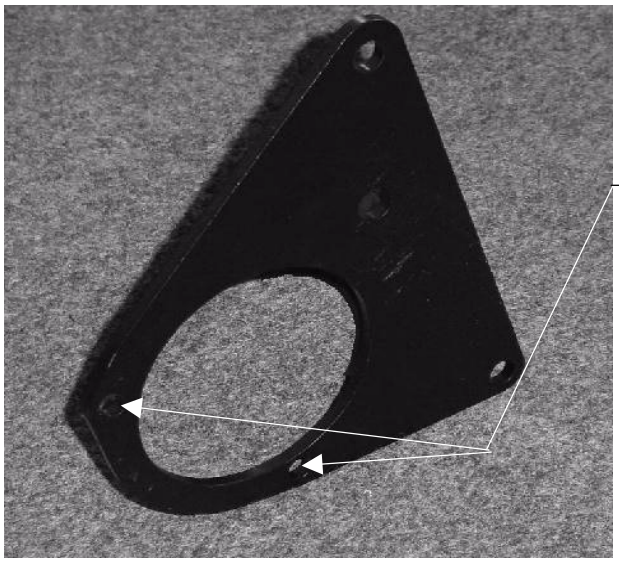
View 3



Identify the R/H Differential mounting bracket and secure to Differential using two 2 x M10 x 45mm Socket Cap Screws and 2 x Spacers here.
2 x M10 x 30mm Socket Cap Screws here
Fit a Spring and Plain Washer to all Socket Cap Screws.
DO NOT FULLY TIGHTEN AT THIS STAGE.
See Diagram 1 (Page 7.7) for more details.

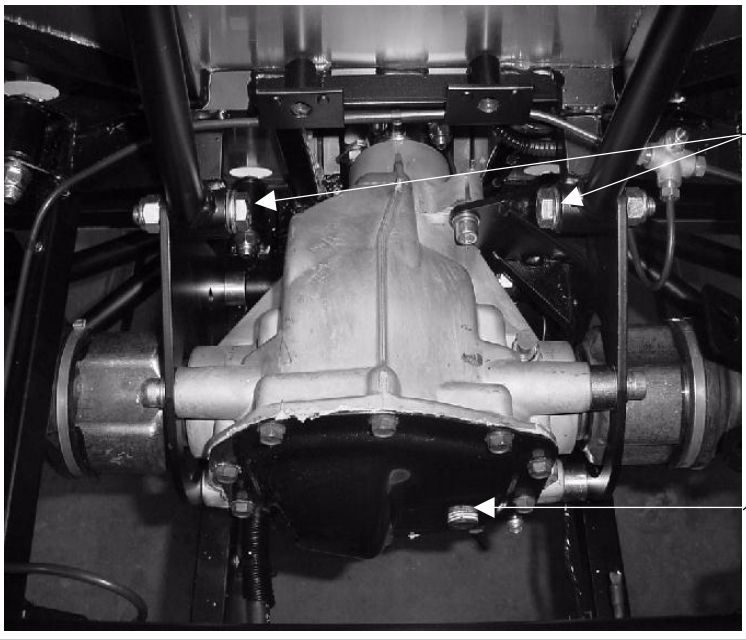
FREELANDER DIFFERENTIAL FITTING PROCEDURE CONTINUED

View 4



Identify the L/H Differential mounting bracket and secure to Differential using two 2 x M10 x 30mm Socket Cap Screws here.
Fit a Spring and Plain Washer to all Socket Cap Screws.
DO NOT FULLY TIGHTEN AT THIS STAGE.
See Diagram 1 (Page 7.7) for more details.

View 5



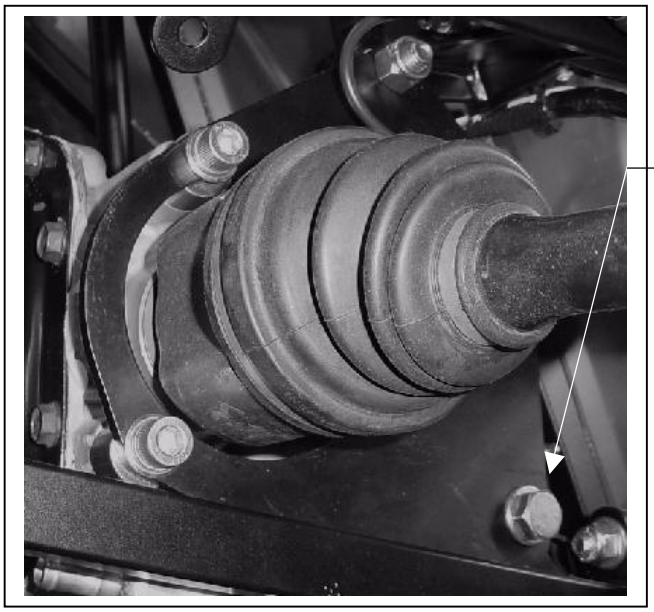
Install Differential into chassis using 2 x M12 x 65mm bolts, 4 x Plain Washers, 2 x Nyloc Nuts through the top mountings. See View 6 and 7 for lower mountings details.

Filler Plug DO NOT FILL DIFFERENTIAL WITH OIL UNTIL DRIVESHAFT HAVE BEEN FITTED.

NOTE: When filling the differential with oil place something underneath the differential to catch the excess oil. Fill differential till oil runs out of the filler plug. MAKE SURE THAT CHASSIS IS ON LEVEL GROUND WHEN FILLING TO AVOID 'FALSE' OIL CAPACITY.

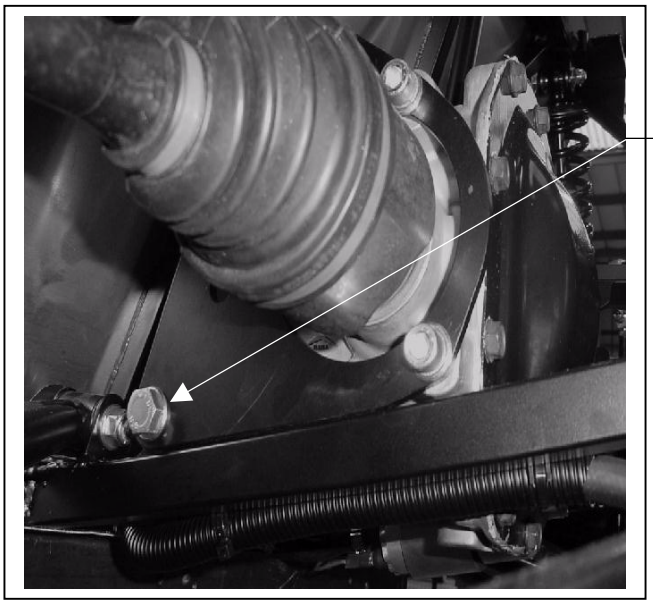
FREELANDER DIFFERENTIAL FITTING PROCEDURE CONTINUED

View 6



Secure the lower part of the R/H Differential Bracket using a M12 x 65mm Bolt, 2 x Plain Washers, 1 x Nyloc Nut.

View 7



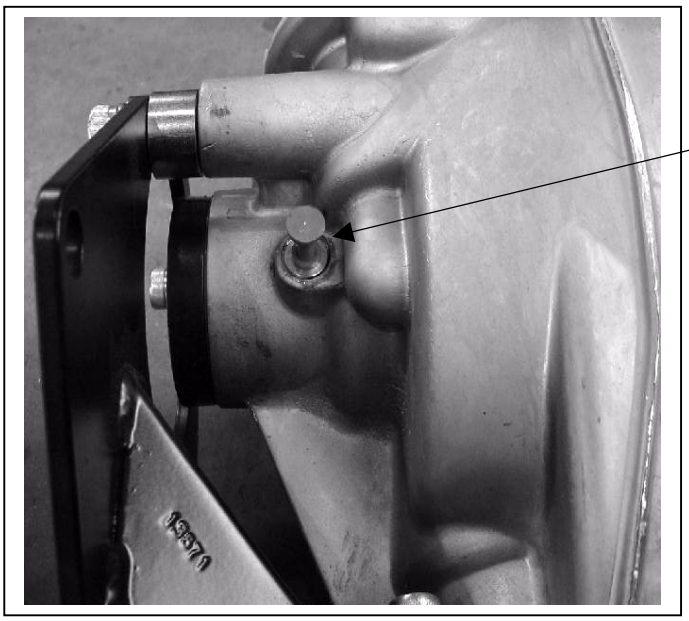
Secure the lower part of the L/H Differential Bracket using a M12 x 80mm Bolt, 2 x Plain Washers, 1 x Nyloc Nut. Use the remaining spacer in-between the bracket and the bush.
See Diagram 1 for more details.

NOTE:

Now torque all the Bolts up to their specified settings.
M12 Bolts and Nuts 40lbs/ft or 54nm
M10 Socket Cap Screws 30lbsft or 40nm

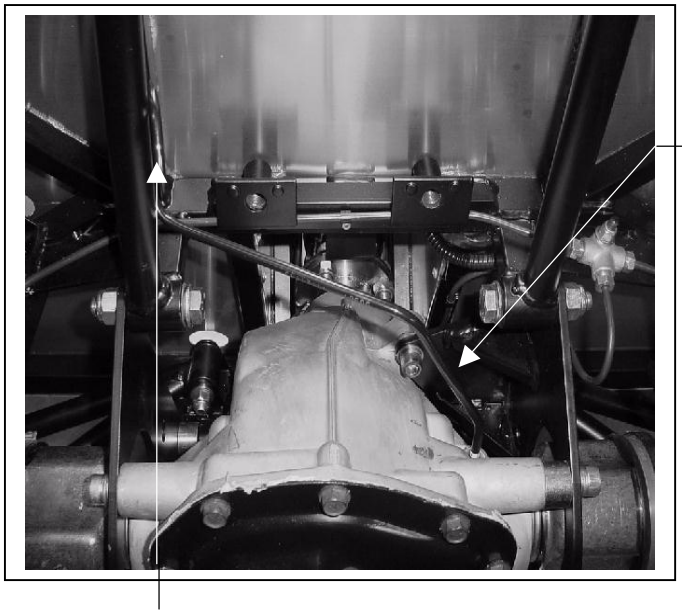
FREELANDER DIFFERENTIAL FITTING PROCEDURE CONTINUED

View 8



Before fitting the Differential Breather Pipe you must remove the red plug. This is done by pushing down the outer ring and then the plug can be pulled out.
WARNING DO NOT TRY TO REMOVE THE RED PLUG WITHOUT PUSHING DOWN THE OUTER RING FIRST.

View 9



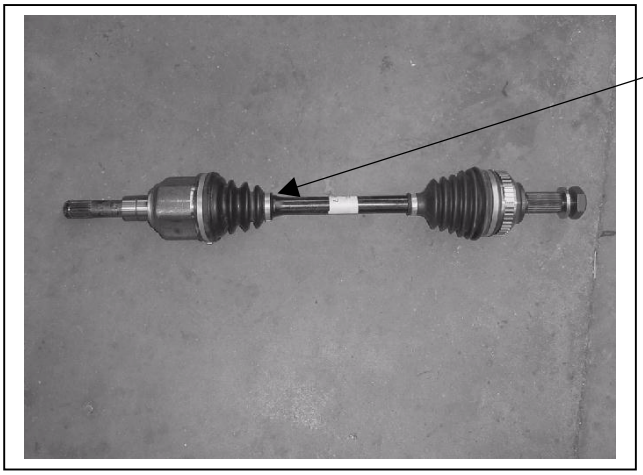
When Red Plug has been removed the breather pipe can now be installed. This is done by pushing the straight end of the breather pipe into the Axle Case Breather Aperture.

NOTE: The breather pipe will stop and the White mark on the pipe will still be visible when you have pushed it down far enough.

Cable Tie breather pipe to chassis at this point.
DO NOT OVERTIGHTEN CABLE TIE AS THIS MAY DAMAGE PIPE.

FREELANDER DIFFERENTIAL FITTING PROCEDURE CONTINUED

View 10

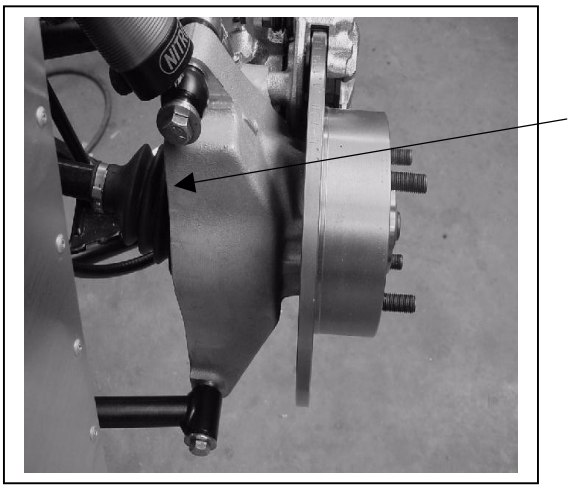


NOTE: The Right Hand Side Driveshaft is longer than the Left Hand Side.
These will have to be put into the Differential using a Heavy duty nylon ended Hammer or an Engineering Hammer and a block of wood.
See View 11.

View 11

Driveshaft inner which goes into differential DO NOT REMOVE CIRCLIP FROM DRIVESHAFT.

View 12



The other end of the driveshaft passes through the upright, then the outer hub pushes onto the driveshaft splines (use 'Copper Slip' on splines to ease installation of outer hub). Finally fit hub nut and washer onto thread protruding out of hub and torque to 250lbs/ft or 340nm, this is best done when the car is on the ground.
View 12 shown with disc and caliper fitted.

INSTALLATION OF `FREELANDER' DIFFERENTIAL UNIT

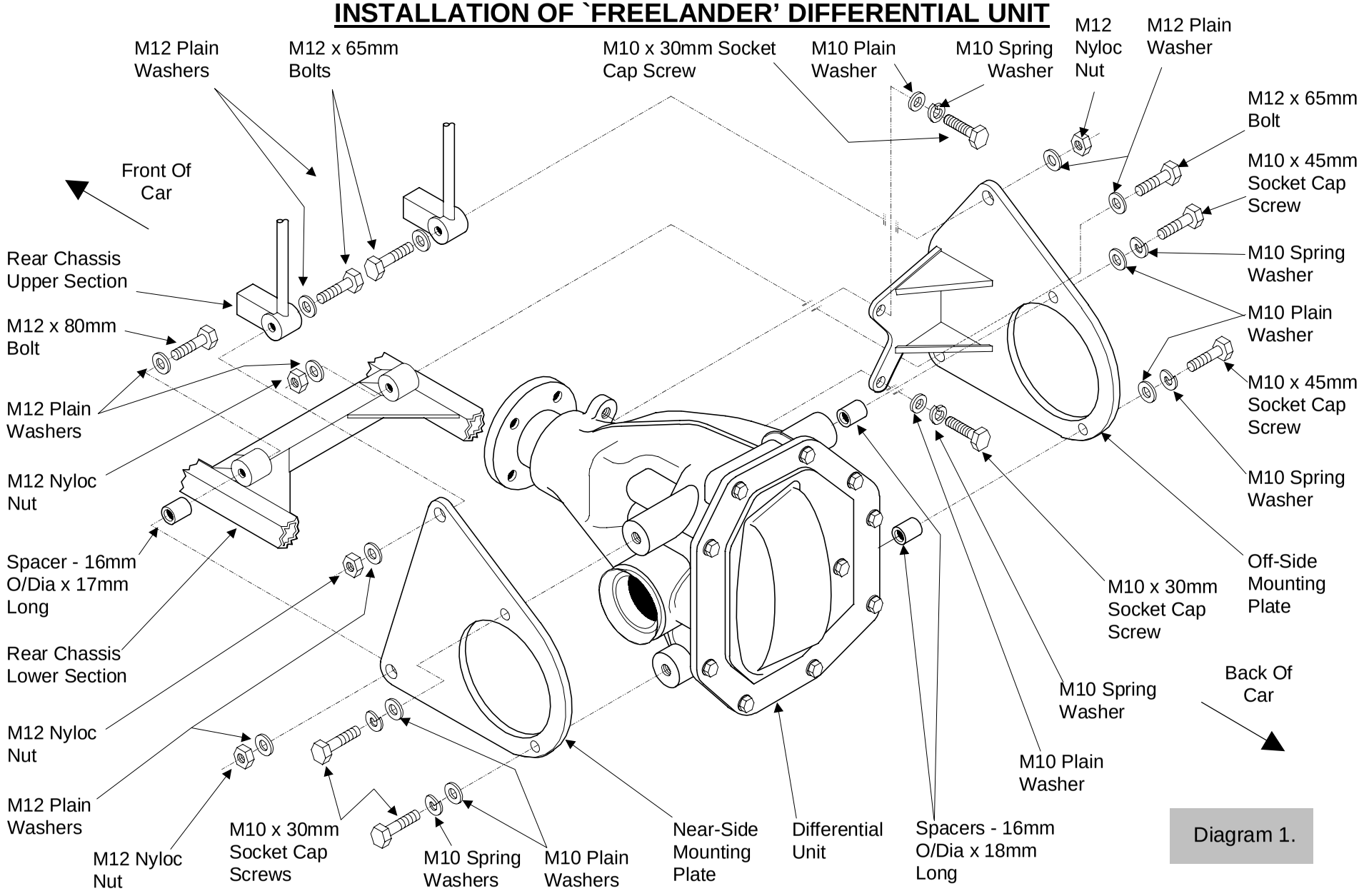


Diagram 1.

REVERSE BOX & PROPSHAFTS
FITTING PROCEDURE

Tools Required:-

– 1 x 17mm Combination Spanner / 1 x 13mm Combination Spanner / 1 x 14mm Combination Spanner / 1 x M8 Socket Drive Allen Key / 1 x M6 Socket Drive Allen Key / 1 x 14mm Socket / 1 x 19mm Socket & Ratchet to suit

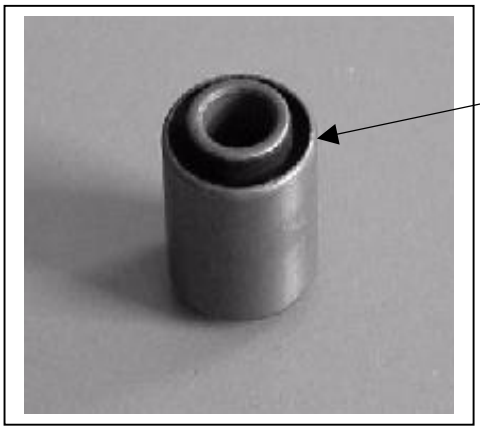
Parts Required:-

– Reverse Box / Reverse Box Mounting Brackets / Front and Rear Propshafts 8 x Metalastic Bushes / EP 80 Hypoid Gear Oil / 270 Locktite

– 4 x 3/8" x 215mm Studs / 8 x 3/8" Nyloc Nuts / 8 x M8 x 20mm Bolts / 12 x M8 x 25mm Socket Cap Screws / 20 x M8 Plain Washers / 20 x M8 Spring Washers / 12 x M8 Binx Nuts / 4 x M10 x 30mm Socket Cap Screws / 4 x M10 Nyloc Nuts

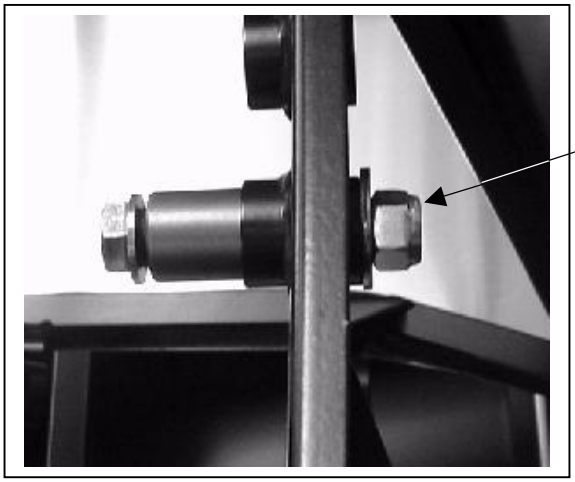
Procedure:-

View 1



Identify the 8 Metalastic Bushes to be pressed into Chassis.
Lubricate with 'Copper Slip' To ease with the installation of the bushes.

View 2

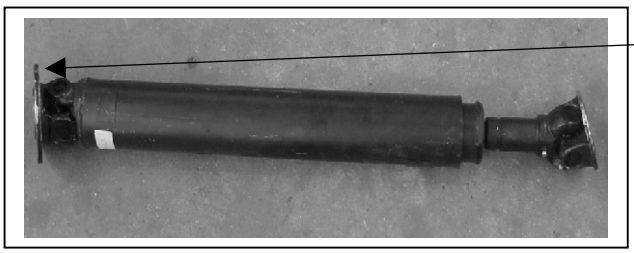


Press the bushes from inside to the outside of the brackets. Using 10mm Bolt that is long enough to pass through the bush and the housing. Fit a large washer and nut and tighten to pull in bush.

WARNING: DO NOT HAMMER BUSHES INTO CHASSIS AS THIS WILL DAMAGE BRACKETS.

REVERSE BOX & PROPSHAFTS FITTING PROCEDURE CONTINUED

View 3

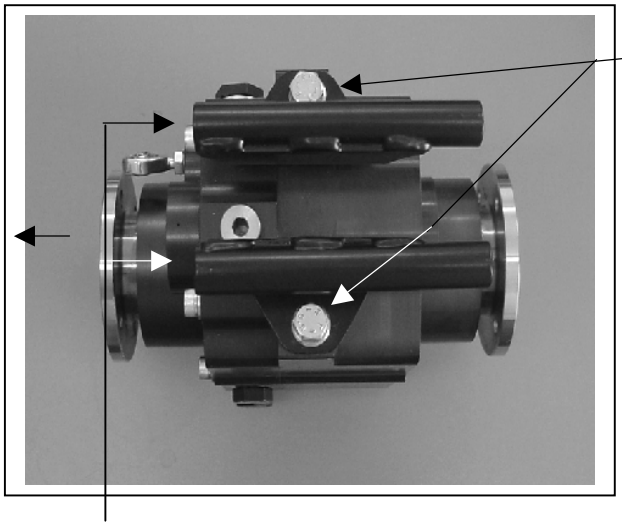


Before fitting reverse box the rear propshaft MUST be fitted. Attach this end to Differential using 4 x M10 x 30 Socket Cap Screws and Nyloc Nuts. Torque Bolts to 35lbsft or 47nm.

NOTE: The Rod End Linkage on the reverse box faces towards the rear of the chassis.

View 4

Rear Of car

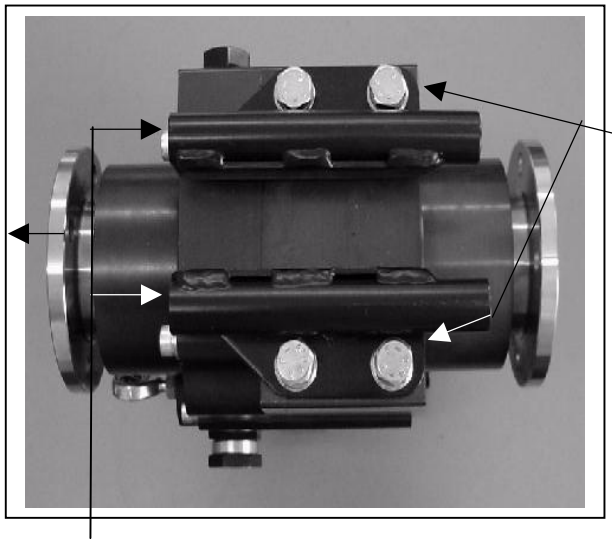


Attach the brackets with the single hole in, to the top of the reverse box using 2 x M8 x 20mm bolts with a spring and a plain washer on each bolt.

Please note the configuration of Brackets

View 5

Rear Of car



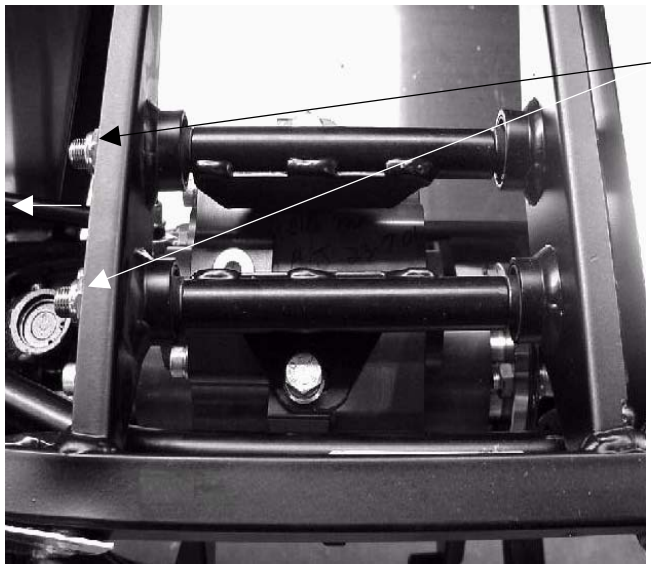
Attach the brackets with the double hole in, to the bottom of the reverse box using 4 x M8 x 20mm bolts with a spring and a plain washer on each bolt.

Please note the configuration of Brackets

REVERSE BOX & PROPSHAFTS FITTING PROCEDURE CONTINUED

View 6

Rear of Car

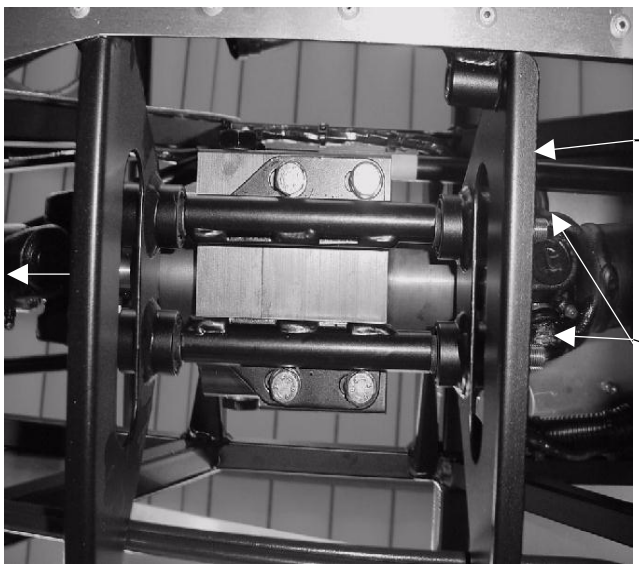


Install the reverse box into the chassis using the 3/8" x 215mm studs and the 3/8 Nyloc Nut.Also see View 6.

See Diagram 1 for more details

View 7

Rear of Car



Attach removeable reverse box mount to chassis using 2 x M8 x 20 bolts with a spring and plain washer on each bolt. APPLY LOCKTITE TO BOLTS AND TIGHTEN.

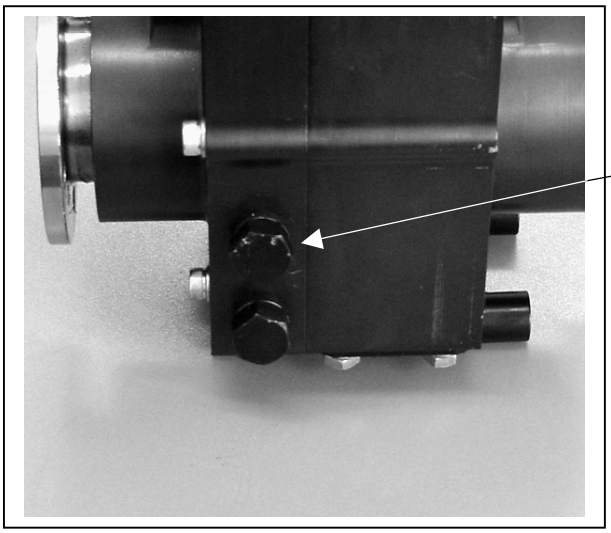
Now secure using remaining two 3/8" x 215mm studs and 3/8" Nylocs Nuts.
See Diagram 1 for more details.

NOTE:

Once all the studs are in place and are tight then the M8 x 20 bolts attaching the reverse box to the brackets will need Locktite applying to them. Remove one bolt at a time apply Locktite, reinsert and tighten.

REVERSE BOX & PROPSHAFTS FITTING PROCEDURE CONTINUED

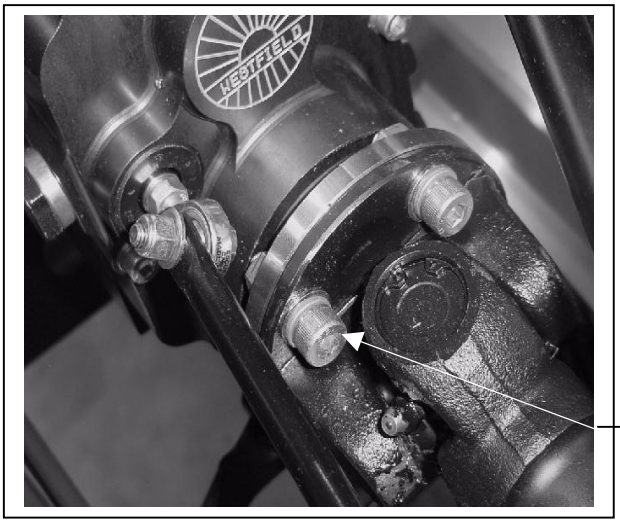
View 8



Now that the reverse box has been installed it can be filled with 180ml of EP 80 Hypoid Gear Oil. Use top bolt to fill Reverse Box with oil (oil filler plug will be located on Drivers side of tunnel).
Socket size for bolt is 19mm

WARNING DO NOT OVERFILL

View 9



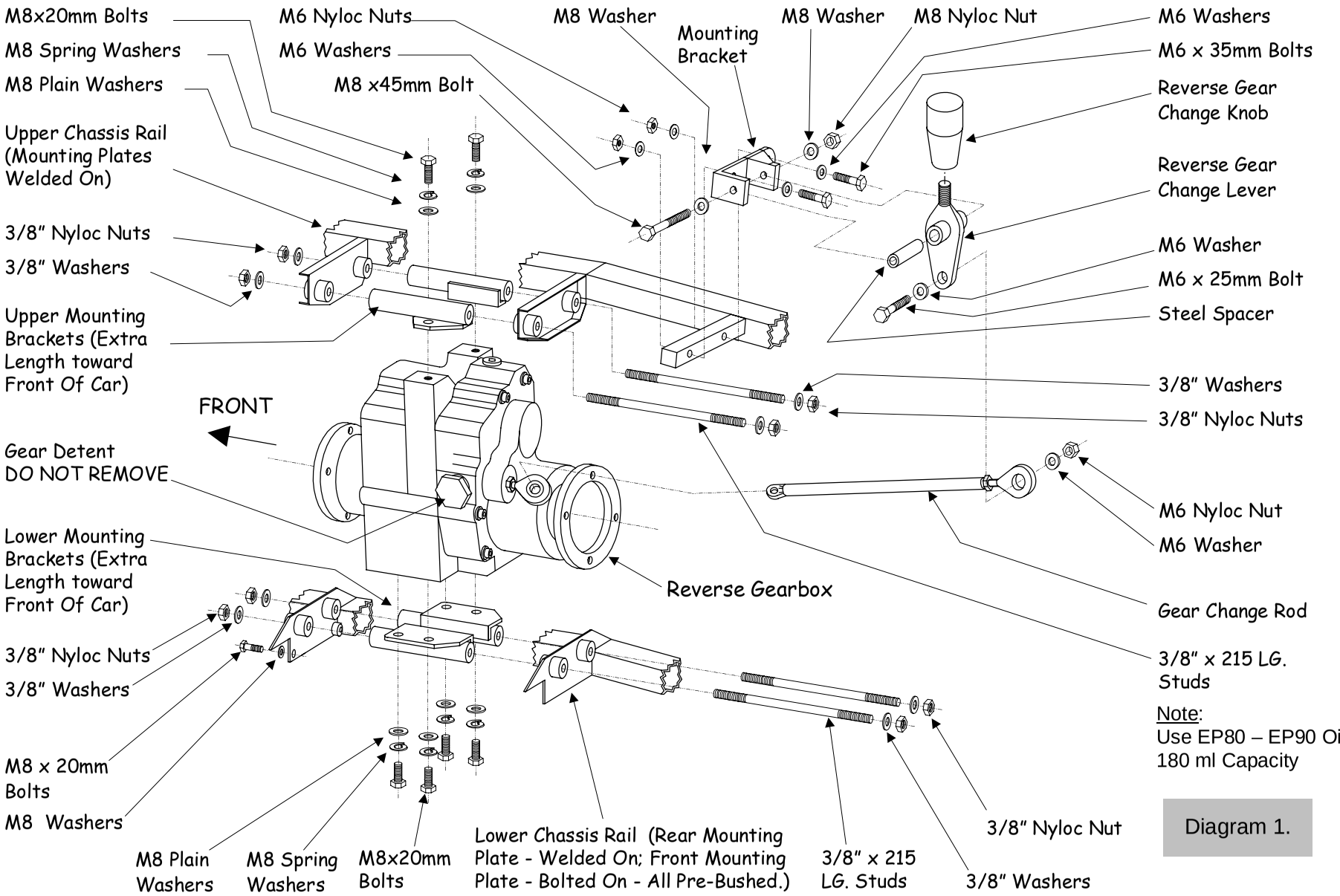
Attach the Front and Rear Propshafts to the reverse box using the M8 x 25mm Socket Cap Screws. Use a Spring and a Plain washer and Binx Nut to secure the Propshafts to the Reverse Box. Torque bolts to 27lbsft or 36nm.
MAKE SURE THAT A SPRING AND PLAIN WASHER ARE USED UNDER HEAD OF BLOTS.
See Diagram 2 (Page 8.6) for more details.

View 10

Connect this end of Front Propshaft to reverse box.

NOTE: Make constant checks on the oil level in the reverse box while running in, and then at regular service intervals. This can be done by removing the Drivers side Tunnel Panel (No. 8 on the Diagram 1 Page 2.2 in the Aluminium Panel Section) and removing the oil filler plug. Make sure the oil is level with this.

REVERSE GEARBOX INSTALLATION



Note:
Use EP80 – EP90 Oil
180 ml Capacity

Diagram 1.

FRONT & REAR PROPSHAFT INSTALLATION

Front Of Car

Notes:

i) Do Not Fit Bolts, Washers & Nuts In Any Other Way Than That Shown Below.

ii) Refer to Torque Tightening Chart.

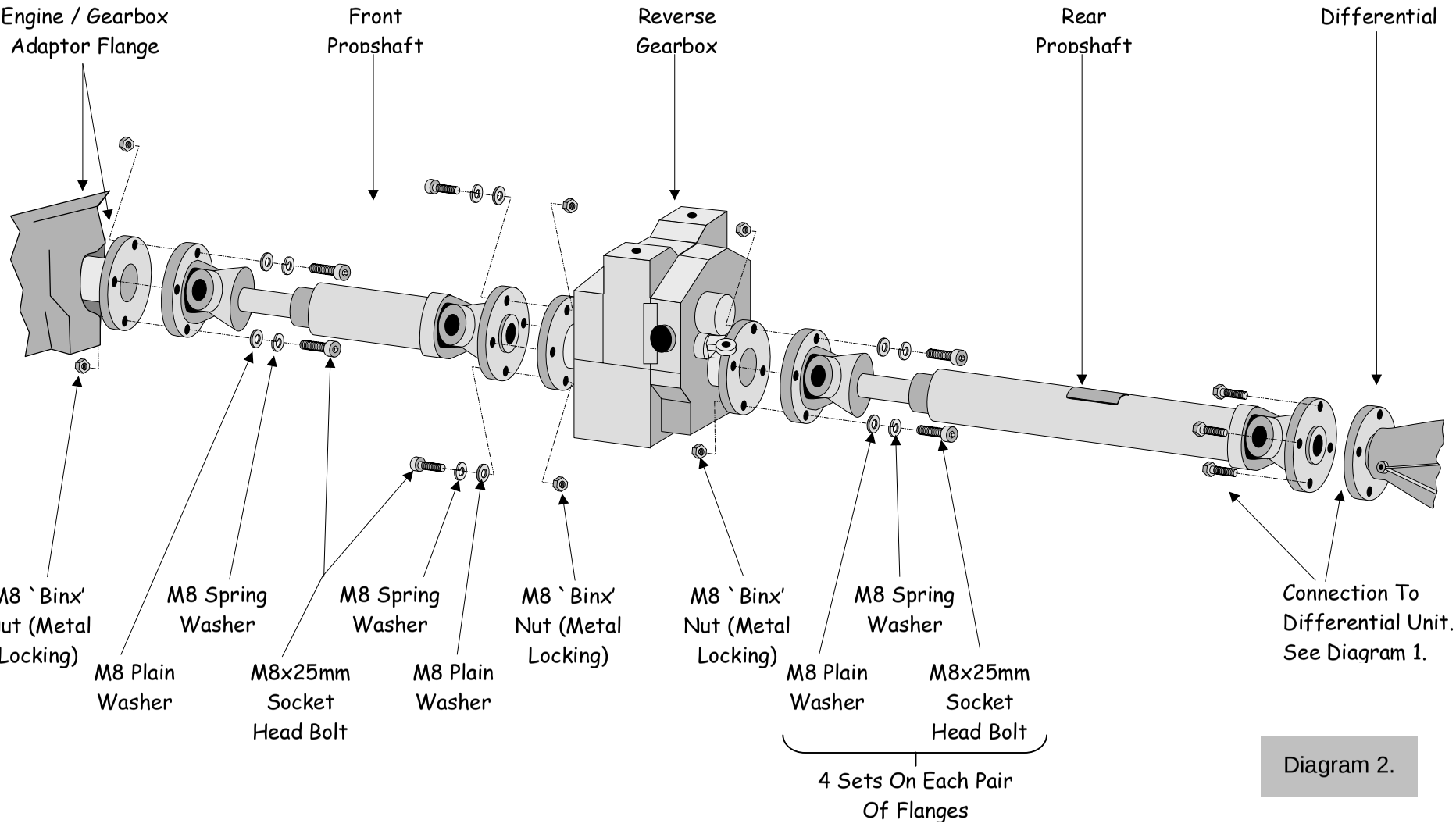


Diagram 2.

GEAR CHANGE & REVERSE SELECTOR FITTING PROCEDURE

Tools Required:-

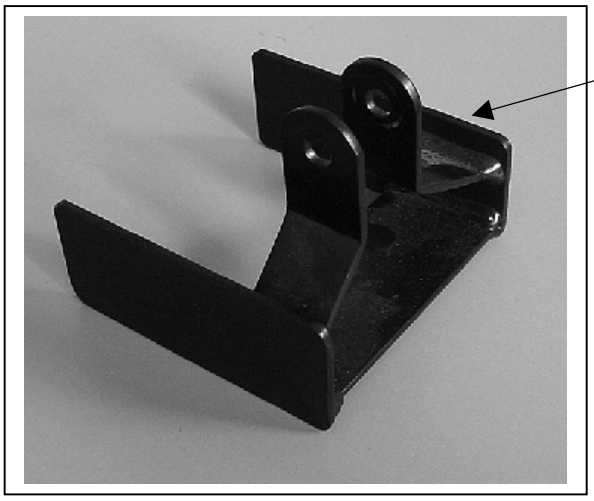
– 4mm Socket Drive Allen key / 10mm and 13mm Combination Spanner / 10mm and 13mm Sockets + Ratchet to suit / Electric Drill / 3.5mm and 6mm Dia Drill Bit

Parts Required:-

– Gear Change Kit / Reverse Selector Kit(Gear Lever and Quadrant are fitted with '12DU' bearing bushes as standard)

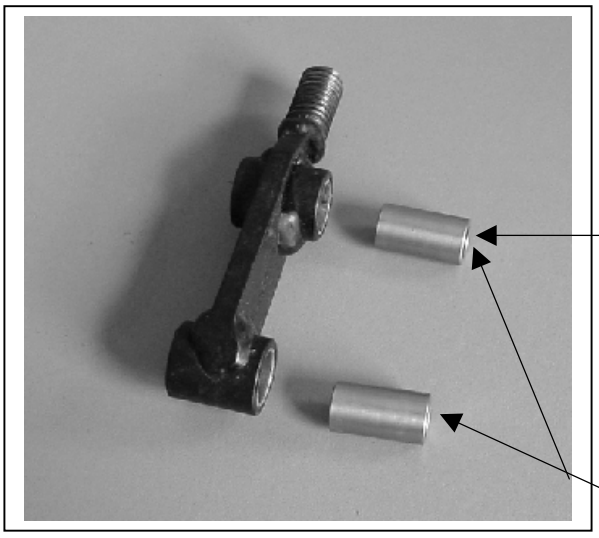
Procedure:-

View 1



Identify the Gear Lever Pivot Housing and secure to chassis using 4 x M6 x 45mm Button Head Screws 4 x Plain Washers and 4 x Nyloc Nuts. Make sure that the top of the side mounting bracket does not protrude over the top of the chassis See view 7. When fitting 'G 'clamp bracket into correct place before drilling (use the holes in chassis as guides) a 6mm hole. See Diagram 1 (Pg 8.5) for more details

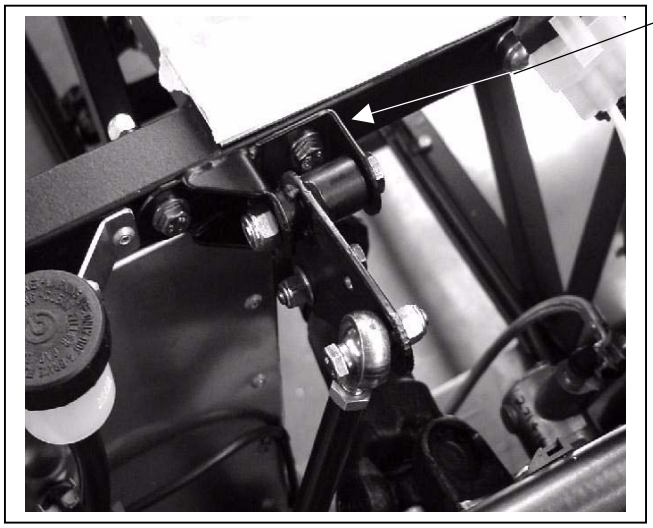
View 2



Before installing the Gear Lever into the Housing lubricate the steel spacer bushes with 'Copper Slip' and insert into gear lever. Secure the gear lever through the top pivot hole using an M8 x 45mm Bolt / 2 x Plain Washers and a Nyloc Nut. See View 5 DO NOT OVERTIGHTEN NUT, gear lever must have free movement.
Bush Length 21mm

GEAR CHANGE & REVERSE SELECTOR FITTING PROCEDURE CONTINUED

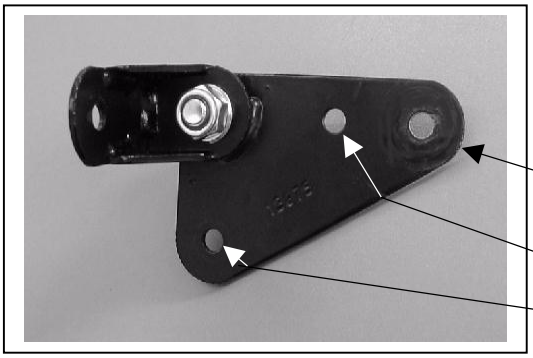
View 3



Attach the Gear Change Quadrant to the pre-drilled holes in the chassis using 2 x M6 x 45mm Bolts 2 x Nyloc Nuts and 2 x Plain Washers under the head of the bolts. Before installing the Quadrant (see view 4) lubricate the steel spacer bushes with 'Copper Slip' and insert into Quadrant. Secure the Quadrant using an M8 x 50mm Bolt / 2 x Plain Washers and a Nyloc Nut.

DO NOT OVERTIGHTEN NUT, Quadrant must have free movement.

View 4

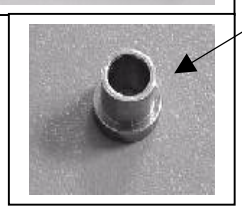


Please note the configuration of the Quadrant when fitting it into the bracket.
Connects to Engine Gear Linkage via Short Rod. See view 9
DO NOT USE THIS HOLE
Connects to long Gear Change Rod Rose Joint. See view 5

View 5

Identify the Gear Change Rod and thread the 5/16 rose joint and lock nut into it.

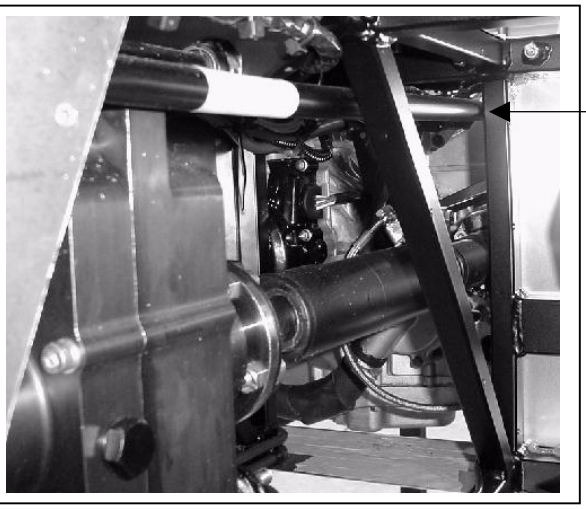
NOTE: This end of Gear Change Rod connects to Gear Lever



Make sure that rose joint sleeves are pushed into rose joint before securing it to the Quadrant.

GEAR CHANGE & REVERSE SELECTOR FITTING PROCEDURE CONTINUED

View 6

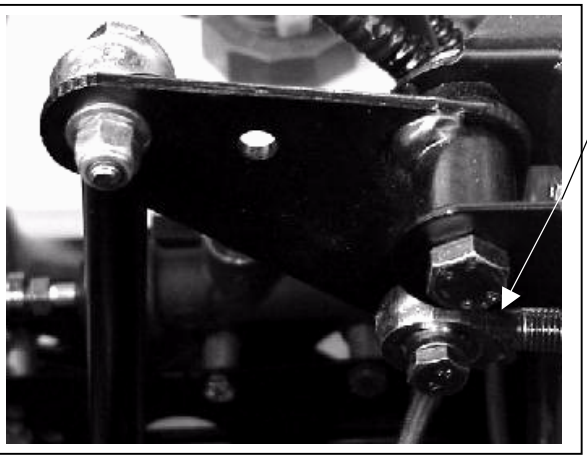


Insert Gear Change Rod into chassis. NOTE: Run Gear Change Rod down the top of the tunnel on the Drivers side. Make sure that the Rod does not foul on the chassis or reverse box(the gear rod may need some adjustment when fitting).

View 7

Attach Gear Change Rod to the Gear lever using an M8 x 45mm Bolt 2 x Plain Washers and a Nyloc Nut.
DO NOT OVERTIGHTEN NUT, GEAR LEVER MUST HAVE FREE MOVEMENT

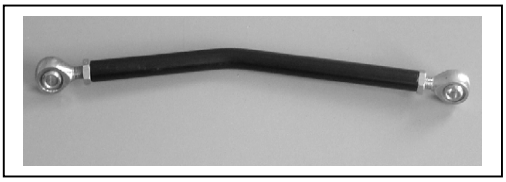
View 8



Attach the other end of Gear Change Rod to the Quadrant using an M6 x 35mm Bolt 1 x Plain Washer and a Nyloc Nut, Place Washer under Nyloc Nut.
DO NOT FORGET TO INSERT ROSE JOINT SLEEVES BEFORE CONNECTING THE GEAR CHANGE TO THE QUADRANT.SEE VIEW 5

GEAR CHANGE & REVERSE SELECTOR FITTING PROCEDURE CONTINUED

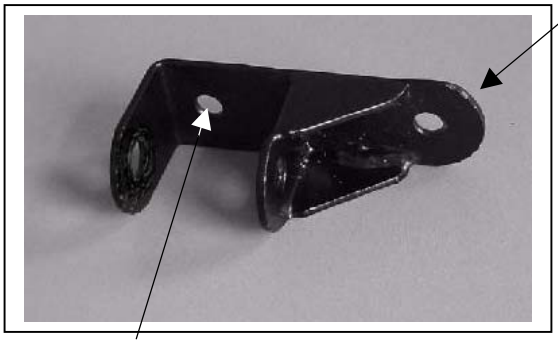
View 9



Thread the other 2 x 5/16 Rose Joints and locknut into the smaller Gear Change Rod. This will be fitted once the Engine has been installed.

NOTE: When fitting the Reverse Selector Bracket DO NOT let bracket protrude over the top of the chassis.

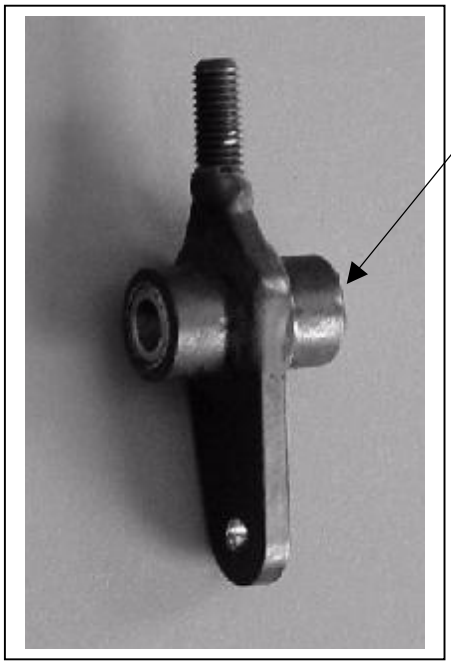
View 10



It may be neccersary to dill 2 x 6mm Dia holes in the chassis for the reverse selector.
See View 12 for position for relevent position.
FIT THE REVERSE SELECTOR BEFORE FITTING THE BRACKET TO THE CHASSIS.

NOTE: Before fitting reverse selector to the bracket, put the fixing bolt (M6 x 35mm) and the washer into the hole behind the Reverse Selector

View 11

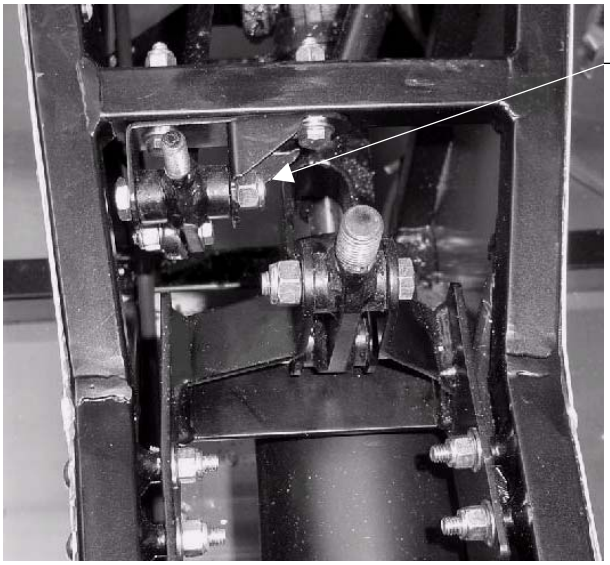


Before installing the Reverse Selector into the bracket lubricate the steel spacer bush with 'Copper Slip'. Secure to bracket with an M8 x 50mm Bolt and a Nyloc Nut. DO NOT OVERTIGHTEN, REVERSE SELECTOR MUST HAVE FREE MOVEMENT.

Bush Length 31mm

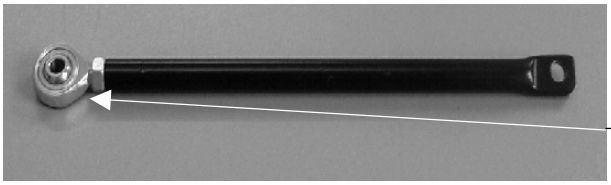
GEAR CHANGE & REVERSE SELECTOR FITTING PROCEDURE CONTINUED

View 12



Secure Reverse Selector to the chassis just in front of the gear change using 2 x M6 x 35mm Bolt 4 Plain Washers and 2 Nyloc Nuts.
DO NOT OVERTIGHTEN NUTS AS THIS MAY DAMAGE CHASSIS.

View 13



Thread the M6 Rose Joint and Locknut into the Reverse Selector rod.

View 14

Attach the Rose Joint to the bottom of the Reverse Selector using an M6 x 25mm Bolt 1 Plain Washer and a Nyloc Nut. Place the Washer under the Nyloc Nut.

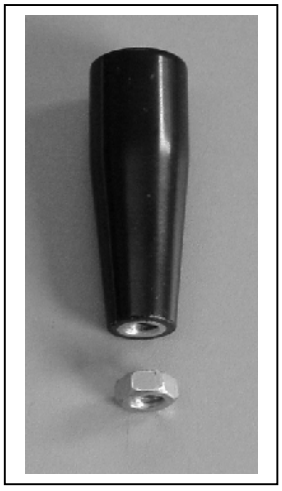
GEAR CHANGE & REVERSE SELECTOR FITTING PROCEDURE CONTINUED

View 15

Attach other end of Reverse Selector Rod to the Rose Joint on the Reverse Box using an M6 x 25mm Bolt 1 Plain Washer and a Nyloc Nut. Place the Washer under the Nyloc Nut.
CHECK FOR CLEARANCE BETWEEN HEAD OF BOLT AND PROPSHAFT FLANGE WHEN SELECTING REVERSE

WARNING: WHEN ATTACHING THE REVERSE SELECTOR TO THE REVERSE BOX ROSE JOINT THE NYLOC NUT MUST BE AS IN VIEW 15, DO NOT PLACE A WASHER UNDER THE HEAD OF THE BOLT.

View 16



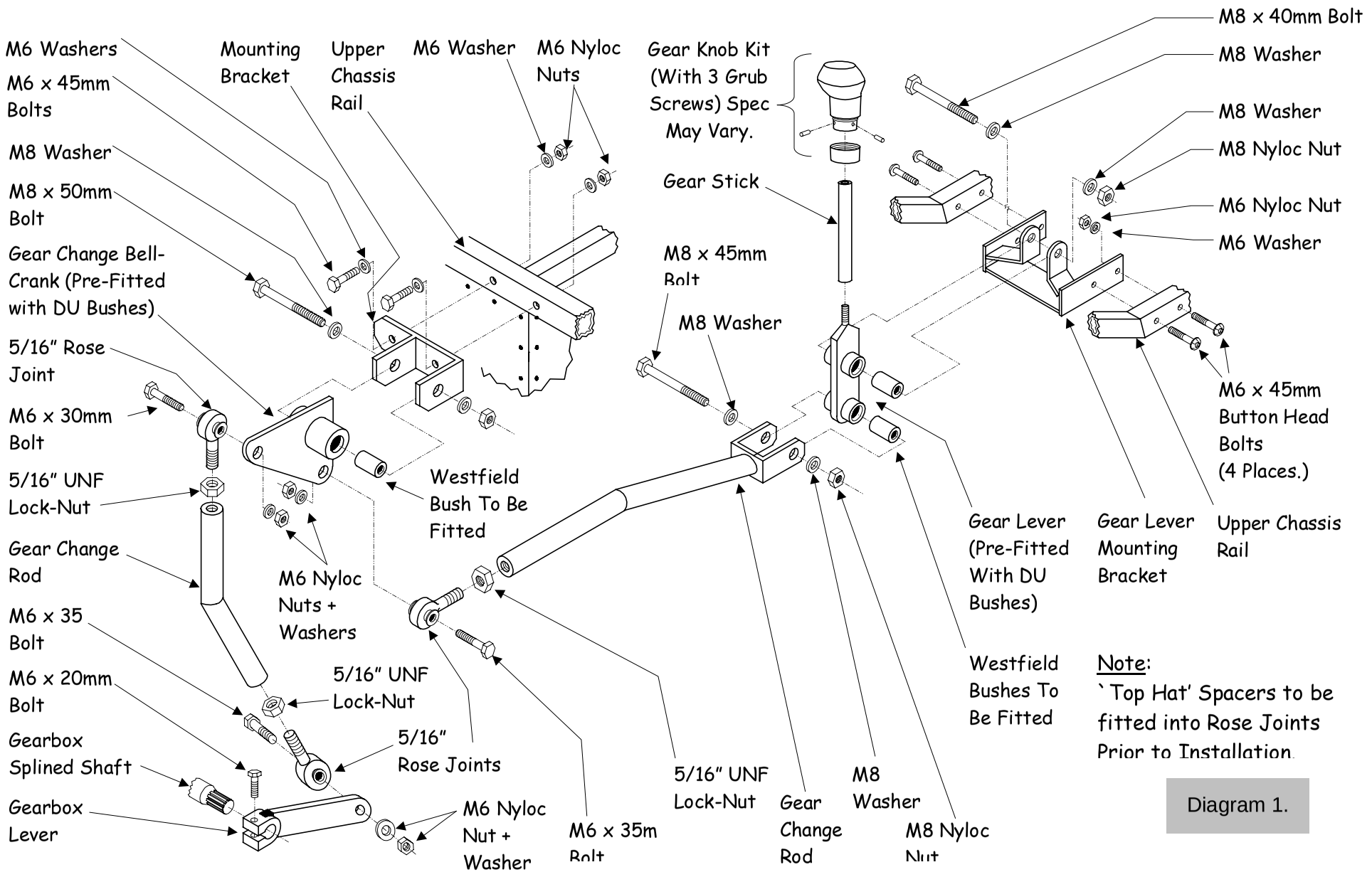
Reverse Lever

View 17

Gear Lever

The Gear Change Lever and Reverse Selector will be fitted later when the tunnel top has been secured into place.
NOTE: Make sure a Locknut is fitted under both levers M8 for the Reverse Lever and M12 for the Gear Lever.

GEARCHANGE LINKAGE INSTALLATION



Note:
`Top Hat' Spacers to be fitted into Rose Joints Prior to Installation.

Diagram 1.

FUEL TANK AND PUMP FITTING PROCEDURE

© It is essential that the fuel hoses used conform to the British Standard BS AU108/2L4/C4/R.
© DO NOT USE PLASTIC FUEL HOSES
© DO NOT USE METAL CLIPS TO ATTACH FUEL HOSE TO CHASSIS
© Make Sure that Fuel Hose is kept away from any Sharp Edges and Moving Parts

Tools Required:-

- Electric Drill / 4.1, 5, 6mm Dia Drill Bits / 2 x 10mm Combination Spanners 8mm Combination Spanner / 3mm Allen Key / Pop Rivet Gun / Medium Sized Flat Bladed Screwdriver or 7mm ¼ Drive Socket and Ratchet

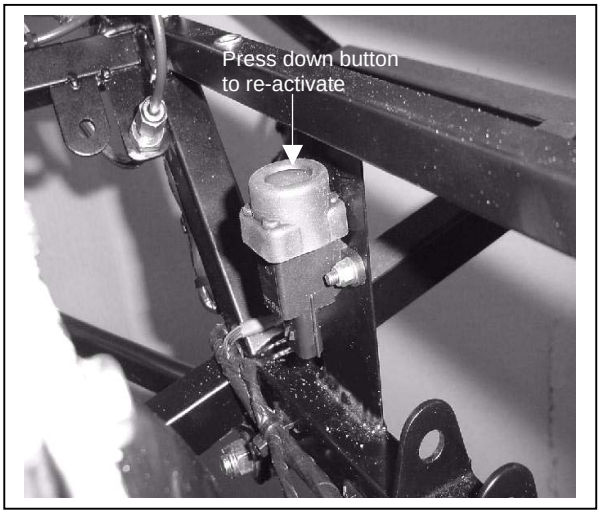
Parts Required:-

- Fuel Tank / Fuel Tank Straps / Fuel Pump / Fuel Pump Strap / Convoluted Tubing 1" and 2" Foam Tape / Inertia Switch / ½ " Fuel Hose / 5/16" Fuel Hose / Breather Pipe / 2 x 14 – 22mm Jubilee Clip / 4 x 11 – 16mm Jubilee Clip.
- 2 x M5 x 16mm Button Heads Screws / 4 x M5 Plain Washers / 2 x M5 Nyloc Nuts 2 x M6 35mm Bolts / 4 x M6 Plain Washers / 2 x M6 Nyloc Nuts / 2 x NX 8 'P' Clips 4 x 4.1mm Large Headed Pop Rivets / 3 x NX 3 'P' Clips / 8 x 4.1 x10mm Dome Head Closed Pop Rivets

Procedure:-

The purpose of the Inertia Switch is to cut the electrical supply to the fuel pump In the event of an accident. It can be re-activated by pressing down on top of the Inertia Switch as described below. If the Inertia Switch has been de-activated due to an accident, the car should be thoroughly checked over before re-activating the Inertia Switch.

View 1

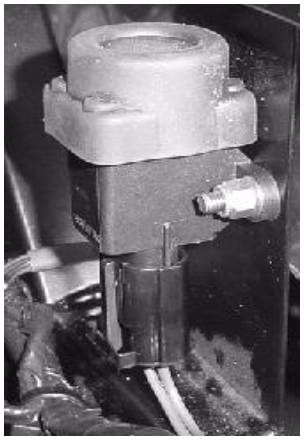


Identify the Inertia Switch and attach to the pre-fitted bracket, located behind the differential. Attach Inertia Switch as shown using 2 x M5 x 16mm Button Head Screws 4 x M5 Plain Washers and 2 x M5 Nyloc Nuts. Drill two 5mm holes in the bracket before fitting the Inertia Switch.

NOTE: Fit Inertia Switch vertically, with the Rubber cover at the top. Make sure the button on the Inertia Switch is pressed down. This is done by pressing down on the rubber cover on top of the Inertia Switch indicated by the arrow.

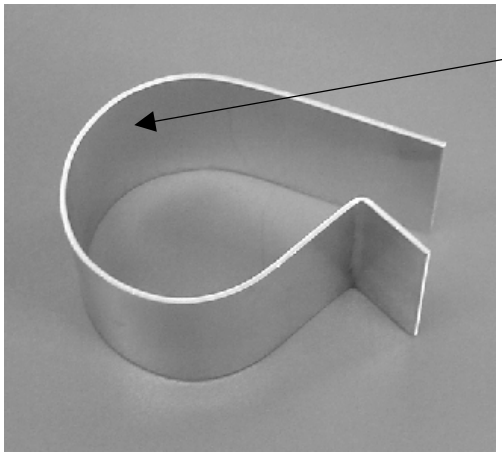
FUEL TANK AND PUMP FITTING PROCEDURE CONTINUED

View 2



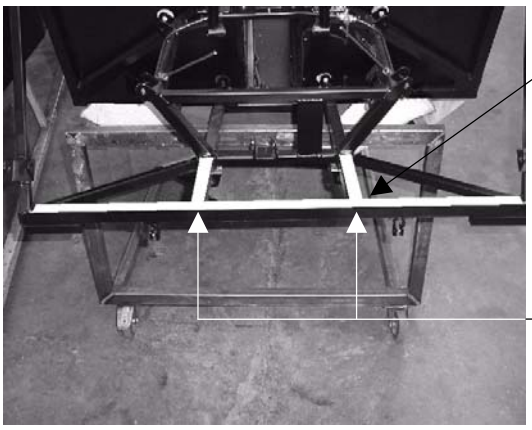
Using the identification chart in Section 6 Chassis Loom, identify the Inertia Switch Plug. Remove the mating half of the plug if fitted and discard, connect the plug attached to the loom onto the bottom of the Inertia Switch.

View 3



Before fitting the Fuel Pump to the chassis attach 2" Foam Tape around the inside of the aluminum Fuel Pump Bracket.

View 4



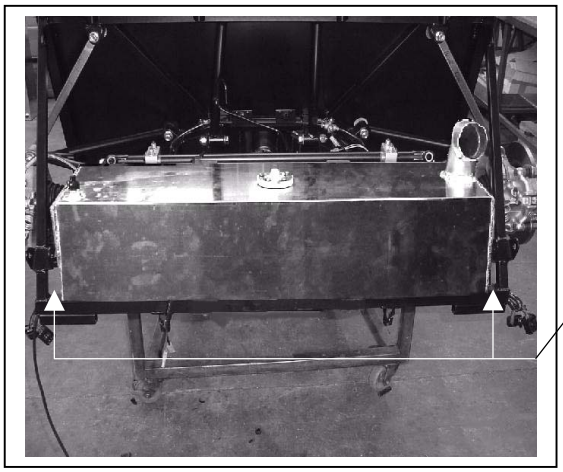
Attach Foam Tape to the rear of the chassis where the fuel tank fits, as in view 5.

The chassis in view 4 is labelled with white tape for reference purposes only.

When attaching the tank straps over the fuel tank make sure they are in line with the two chassis tubes

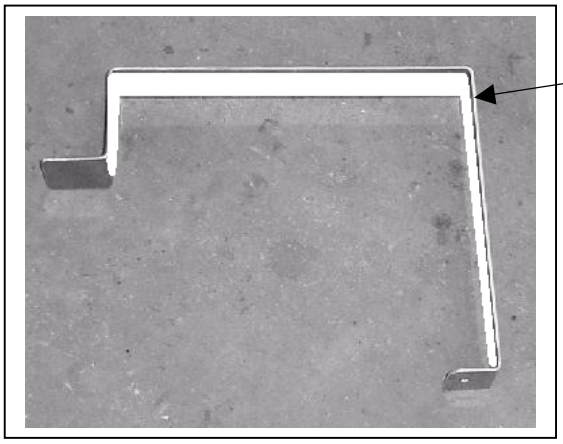
FUEL TANK AND PUMP FITTING PROCEDURE CONTINUED

View 5



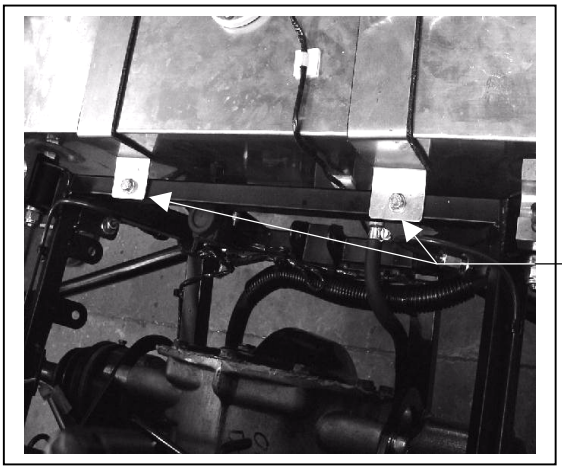
Place the fuel tank onto the rear of the chassis where the foam tape has been fitted.
When fixing the tank make sure that there is an equal gap between the outer chassis rails and the fuel tank.

View 6



Before attaching the fuel tank straps to the tank, attach 1" foam tape to the tank strap as shown.

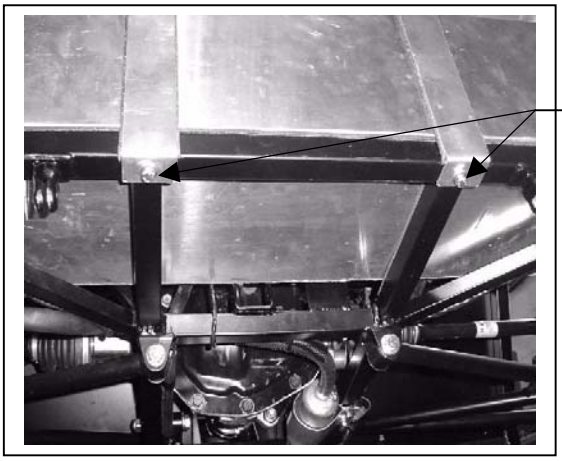
View 7



Attach the front of the tank straps to the chassis rail just in front of the fuel tank using 2 x M6 x 20mm Hex Headed Screws with a plain and spring washer on each bolt into the rivnuts provided.
If there are no rivnuts provided in the chassis then it will be necessary to drill a 6mm hole straight through the chassis and attach using 2 x M6 x 30mm Bolts, 4 x plain washers and 2 x Nyloc nuts.

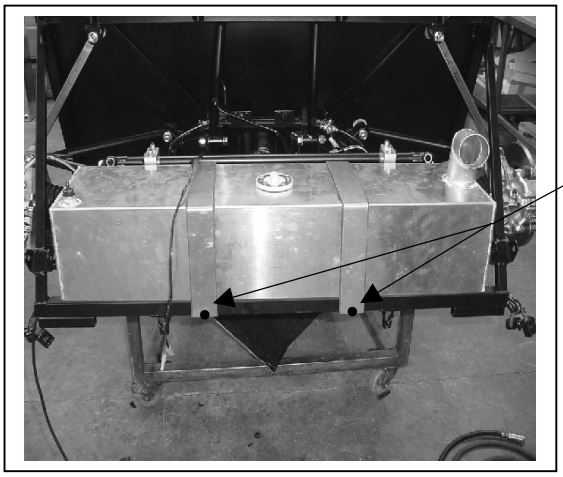
FUEL TANK AND PUMP FITTING PROCEDURE CONTINUED

View 8



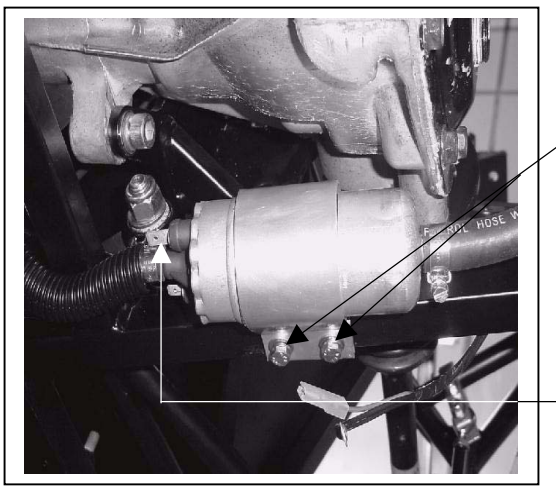
Attach the other end of the fuel tank straps to the underside of the rear most chassis rail using 2 x M6 x 20mm Hex Headed Screws with a plain and spring washer on each bolt into the rivnuts provided.

View 9



If there are no rivnuts provided in the chassis then it will be necessary to drill and pop rivet the fuel tank straps onto the chassis using two 4.1mm large headed pop rivets.

View 10

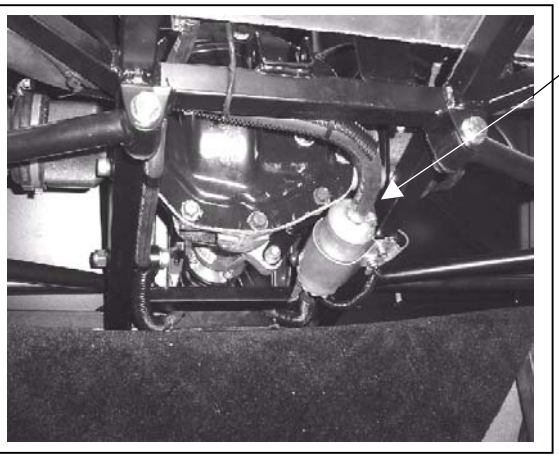


Attach the Fuel Pump and bracket to the O/S chassis rail underneath the Differential using 2 x M6 x 35mm bolts 4 x M6 Plain Washers and 2 x Nyloc Nuts. It will be necessary to drill two M6 holes in the chassis and Fuel Pump Bracket before attaching to the chassis. See View 11 for the correct placement of the Fuel Pump on the chassis.

NOTE: Electrical terminals point towards the front of the car.

FUEL TANK AND PUMP FITTING PROCEDURE CONTINUED

View 11

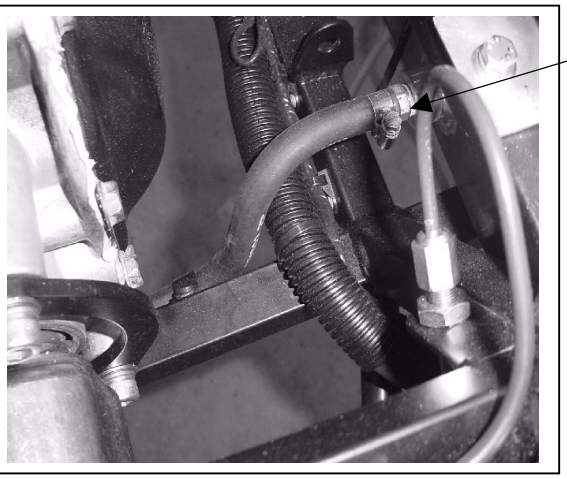


Fuel Pump attaches under the right hand side of the differential.

View 12

Run a length of 5/16 Rubber Fuel hose from the Left Hand steel fuel pipe in the chassis tunnel up the chassis rail under the differential to the fuel tank see View 13.
Attach rubber fuel hose using 2 x 11-16mm-jubilee clips.
Secure the rubber hose to the chassis using 2 x NX 8 'P' Clips and 2 x 4.1mm Large Headed Pop Rivets.

View 13



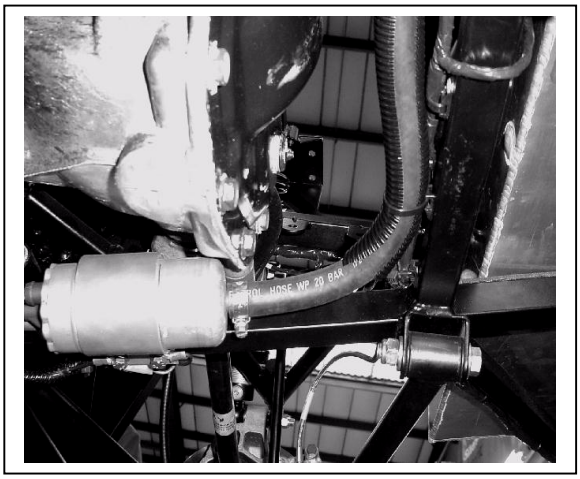
Connect the hose onto the central outlet welded onto the tank.

FUEL TANK AND PUMP FITTING PROCEDURE CONTINUED

View 14

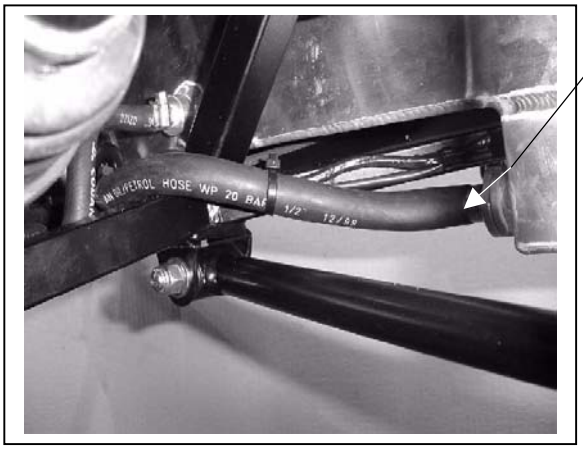
Run a length of 5/16 fuel hose from the outlet on the Fuel Pump to the R/H side Steel fuel pipe in the tunnel.
Attach the rubber fuel hose using 2 x 11-16mm-jubilee clips.
Where the pipe runs close to the chassis it may be necessary to place covoluted tubing over the rubber pipe to prevent chaifing.

View 15



The ½ " fuel hose runs from the rear of the pump to the outlet on the nearside of the tank. Attach the fuel hose using 2 x 14 – 22mm jubilee clips.
Where the pipe runs close to the chassis it may be necessary to place convoluted tubing over the rubber pipe to prevent chaifing.

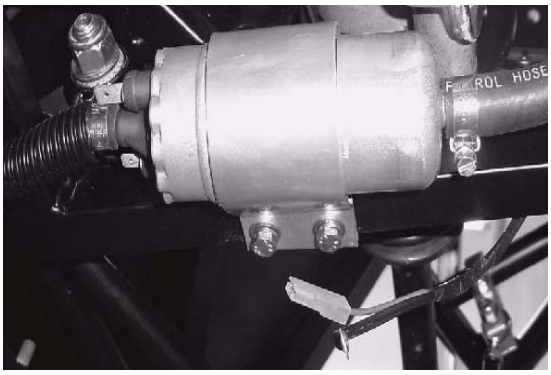
View 16



Run the ½ " rubber fuel hose over the top of the chassis rail and connect it onto the fuel tank.
Make sure that the fuel pipe is fixed securely to the chassis.

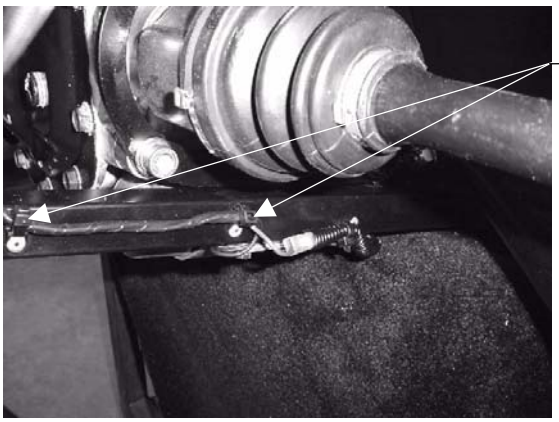
FUEL TANK AND PUMP FITTING PROCEDURE CONTINUED

View 17



Using the identification chart in Section 6 Chassis Loom! Identify the fuel pump wires and connect the Green wire to the larger terminal marked with a + and the black wire to the smaller terminal marked with a -.

View 18



Make sure that the fuel pump wires are securely fastened to the chassis using loom saddles and cable ties.

View 19

Using the identification chart in Section 6 Chassis Loom! Identify the fuel tank sender wires and connect them onto the fuel tank sender.
The wires can be connected either way round on the sender.

NOTE: Make sure that all jubilee clips are tight, and all fuel pipes are securely and safely fastened to the chassis, using convoluted tubing where necessary.

ENGINE PREPARATION

© It is recommended that any work on the Engine be undertaken by a qualified person.
© The original Suzuki sump assembly is not suitable for the Westfield Megabusa car; A new Westfield sump kit must be used.
© It is advisable to change the Engine Oil and Oil Filter if using a Secondhand Engine.
© WARNING WHEN THE THROTTLE LINKAGES AND INJECTION ASSEMBLY ARE REMOVED FROM ENGINE MAKE SURE THE INLET PORTS ARE COVERED SO NOTHING CAN FALL DOWN THEM.
© Make sure that the following tasks are undertaken before the engine is installed into the chassis.
© WARNING:- Before removing the Sump drain the old oil from the Engine and make sure that all external dirt and debris is removed. When turning the Engine over to remove the Sump be Careful not to damage any external Components on the Engine.

Tools Required:-

- Soft Faced Hammer / M4 and M8 Socket Drive Allen Keys / 10mm, 13mm and 19mm Combination Spanners / 10mm and 19mm Sockets and Ratchet to suit

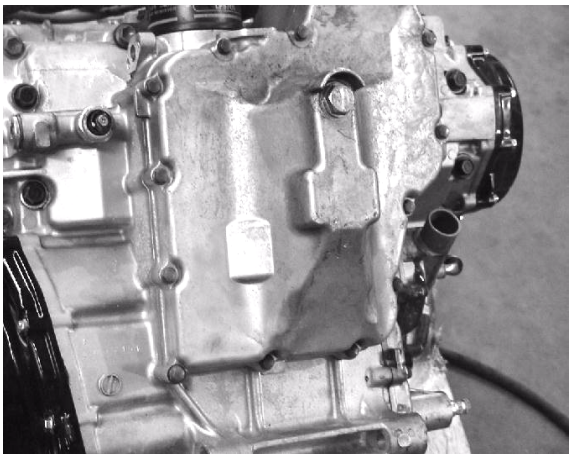
Parts Required:-

- Westfield Sump / Modified Oil Pickup / Sump Foam / Upper Engine Frame and Bracket C/W Bushes / Lower Engine Frame C/W Bushes / Clutch Slave Cylinder / Clutch Slave Cylinder Mounting Brackets / Output Flange / Output Flange Washer / Output Flange Bolt M10 (1.5mm Pitch) x 25mm Cap Head Bolt
- 1 x M12 x 270mm Stud / 1 x M12 x 285mm Stud / 8 x M12 Plain Washers
  4 x M12 Nyloc Nuts / 4 x M10 (1.25mm Pitch) x 50mm Cap Head Bolts
  4 x M10 Washers / 2 x M8 x 25mm Bolt / 2 x M8 Spring Washers
  1 x M6 x 40mm Bolt / 1 x M6 x 35mm Bolt / 2 x M8 x 45mm Bolts
  6 x M6 x 20mm hex Head Screws / 6 x M6 Spring Washers
  6 x M6 Plain Washers / 4 x M8 Plain Washers / 2 x M8 Nyloc Nuts
  1 x M6 Nyloc Nut / 14 x M6 x 55mm Bolts / 14 x M6 Plain Washers
  14 x M6 Spring Washers

Procedure:-

ENGINE PREPARATION
CONTINUED

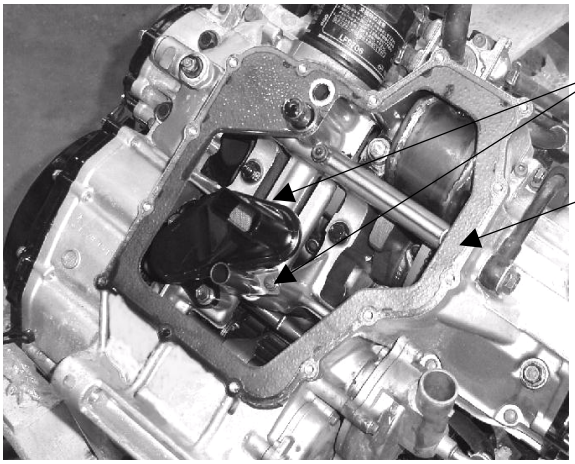
View 1



When engine has been turned over remove the 14 M6 Bolts from the sump using a 'Criss-Cross' pattern. Tap the sump lightly with a soft-faced hammer to loosen it from the engine.

NOTE: When changing the sump also see Diagram 1 at the end of this section for further information.

View 2



Remove the oil pickup and return pipes for modification, and return to Westfield for modification.
Remove any traces of sump gasket from the mating face of the engine. Retain bolts for refitting

View 3

Both M6 Bolts will have to be removed from the oil pickup.

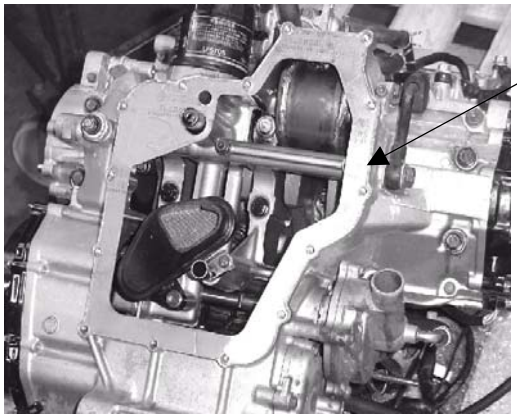
ENGINE PREPARATION CONTINUED

View 4

Re-fit the modified Oil pickup and modified Oil return pipe using the original bolts.

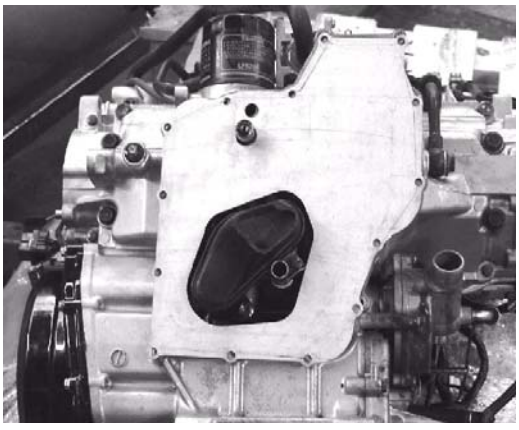
WARNING make sure that the oil pickup and return pipe are clean and free from any dirt or debris before refitting them into the engine.

View 5



Place a new gasket back onto the engine.

View 6

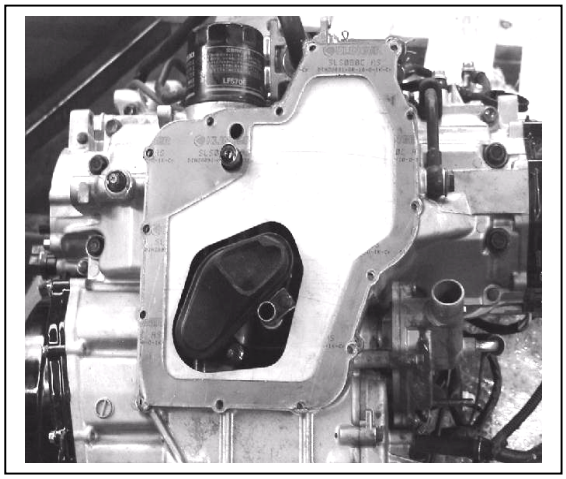


Next place the sump baffle onto the engine on top of the gasket.

Check that all the holes line up from the baffle to the engine.

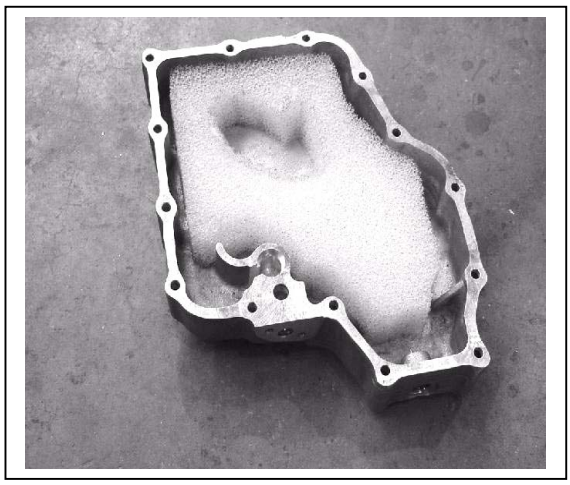
ENGINE PREPARATION CONTINUED

View 7



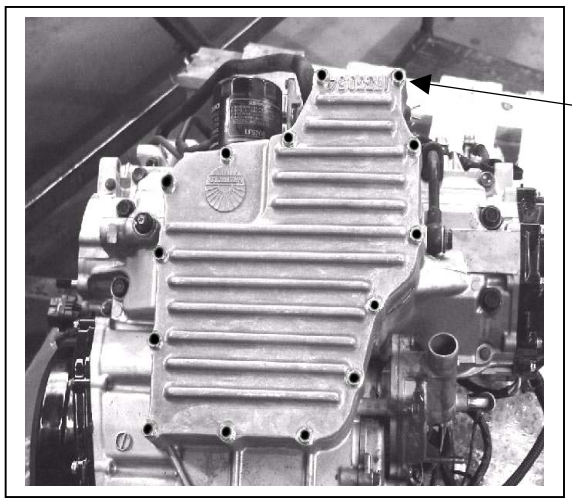
Now place another new sump gasket onto the baffle so the baffle is inbetween the two sump gaskets.

View 8



Place the foam into the sump to check for fitment, also make sure the foam does not block the pickup or return pipes when fitting the sump onto the engine.

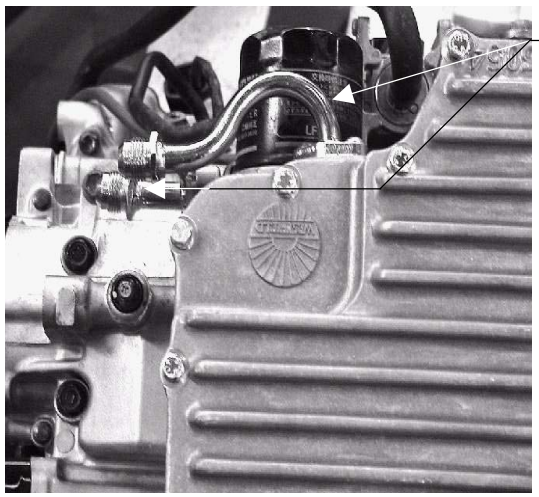
View 9



Fit the 14 x M6 x 55mm Bolts with a Spring and a Plain Washer under each bolt into the sump. Make sure that the Gaskets and the Baffle line up when inserting the bolts. Tighten the bolts using a Criss-cross pattern. Fit and tighten the Sump Plug. **NOTE: No silicone or gasket sealant is required in the fitment of the sump.**

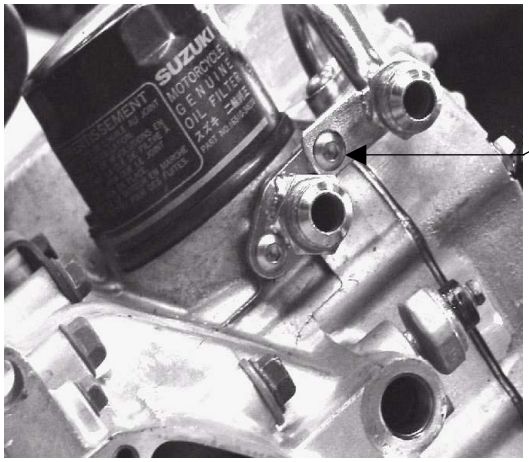
ENGINE PREPARATION
CONTINUED

View 10



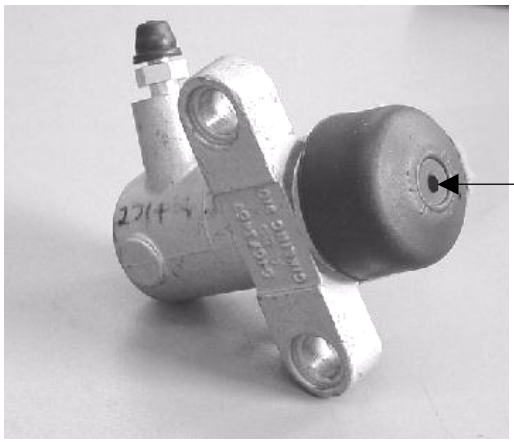
Identify the oil cooler take off pipes and fit to the Sump and the Engine using 4 x M6 x 20mm Button Head Screws with a Spring Washer under each screw.
WARNING Make sure that the 'O' Rings are installed correctly into the pipes before fitment.
See View 11 for more details.

View 11



Fit the smaller of the two pipes to the engine first as the Support bracket on the longer pipe fits onto the outside of the flange on the smaller pipe.
Fully tighten all the bolts when both pipes are in place.
The engine can be now be turned back over, taking care not to damage any external components on the engine.

View 12

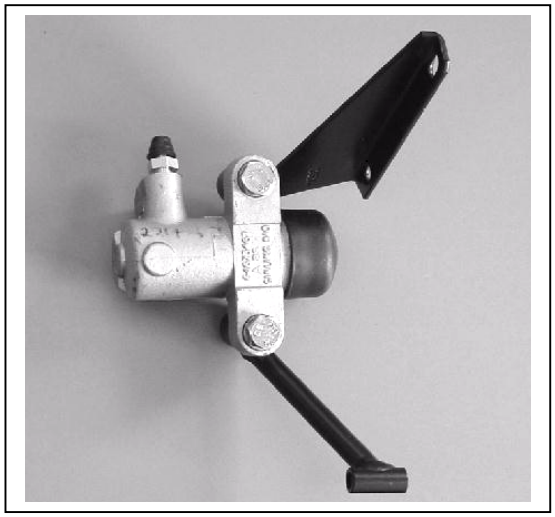


Identify the Clutch Slave Cylinder which will be fitted to the engine.

Push Rod on engine fits into here.

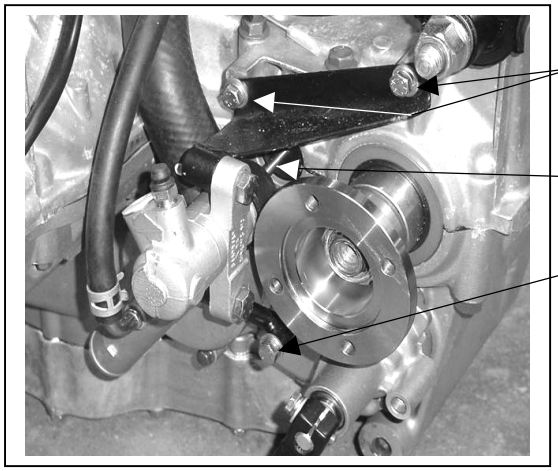
ENGINE PREPARATION
CONTINUED

View 13



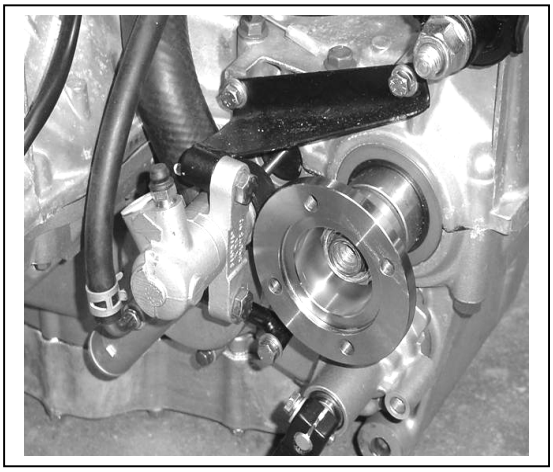
Loosely fit the two brackets to the Slave Cylinder as shown, using 2 x M8 x 25mm Screws and Spring Washers.

View 14



Attach the top bracket to the engine using 2 x M6 x 20mm Hex Headed Screws and Plain, Spring Washers.
Ensure the Clutch Push Rod is correctly located into the Slave Cylinder
Attach the lower bracket using an M6 x 35mm Bolt with a Plain and a Spring Washer.
Fully tighten all bolts.

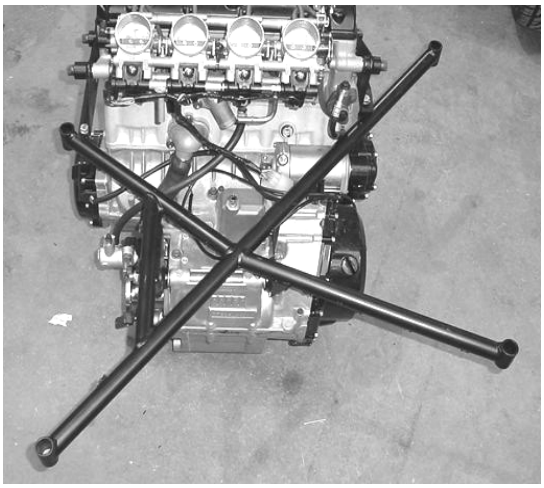
View 15



Before fitting the Output Flange to the engine the original Sprocket must be removed and discarded.
DO NOT DISCARD THE NUT THAT IS REMOVED WITH THE SPROCKET
Fit the Output Flange onto the Shaft and apply threadlock to the nut. Tighten the nut to 105lbs/ft.
W hen tightening the nut use a large pry-bar and two M8 bolts to stop the flange from turning. Discard the M8 bolts when finished.

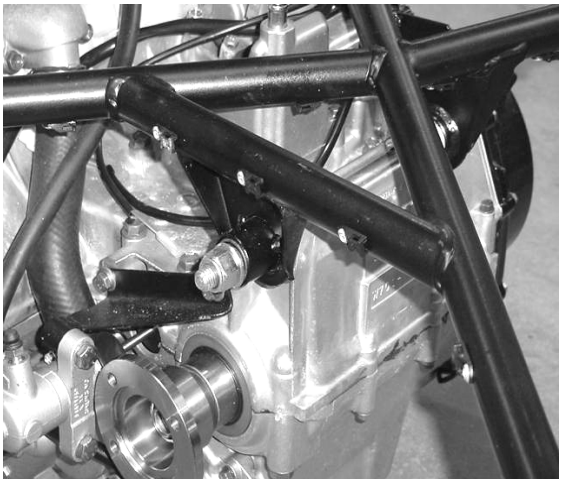
ENGINE PREPARATION
CONTINUED

View 16



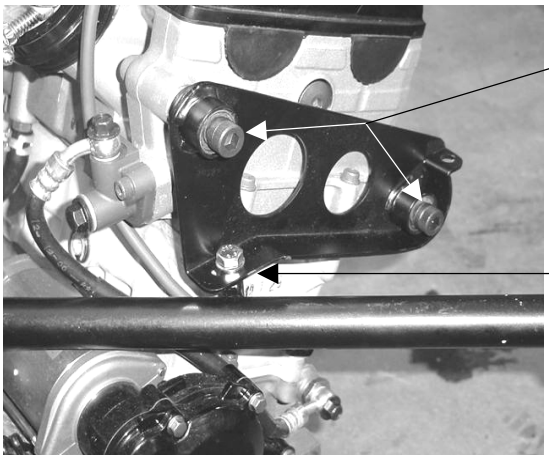
Identify the upper engine frame and attach it to the top gearbox mount, the following Views show how this is done.

View 17



Attach the upper engine frame to the top gearbox mount using an M12 x 270mm Stud 4 x Plain Washers and 2 x Nyloc Nuts.
Place two of the washers under the nuts and the other washers go between the engine frame and the Gearbox.
Do not tighten at this stage.

View 18



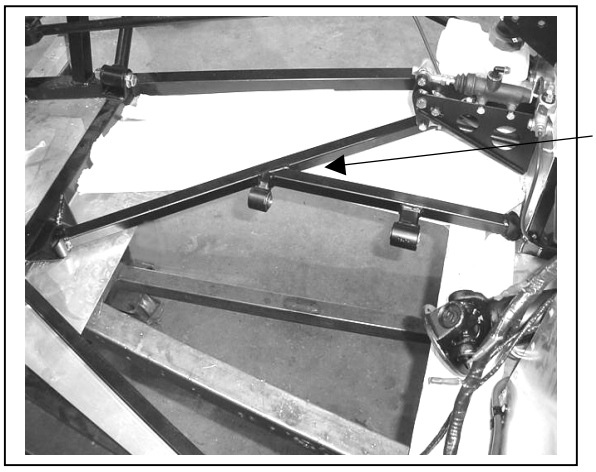
Identify the front engine bracket and attach it to the engine using 2 x M10 (1.25mm pitch) x 50mm and 2 x M10 Plain Washers.
The bracket also attaches to the frame using an M8 x 45mm Bolt 2 x Plain Washers and a Nyloc Nut.
Do not tighten at this stage.

ENGINE PREPARATION
CONTINUED

View 19

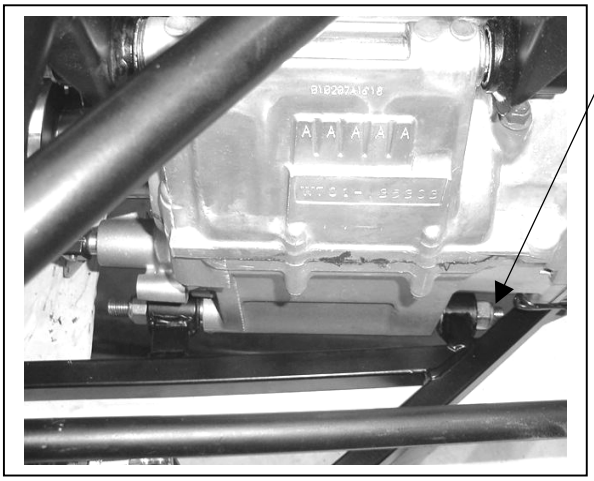
Identify the rear engine bracket and attach it to the engine using 2 x M10 (1.25mm pitch) x 50mm and 2 x M10 Plain Washers.
The bracket also attaches to the frame using an M8 x 45mm Bolt 2 x Plain Washers and a Nyloc Nut.
Fully tighten all bolts on Engine Frame.

View 20



Do not attach the lower frame to the engine until it is placed into the chassis.
When all the above procedures are complete the engine can be placed into the chassis.

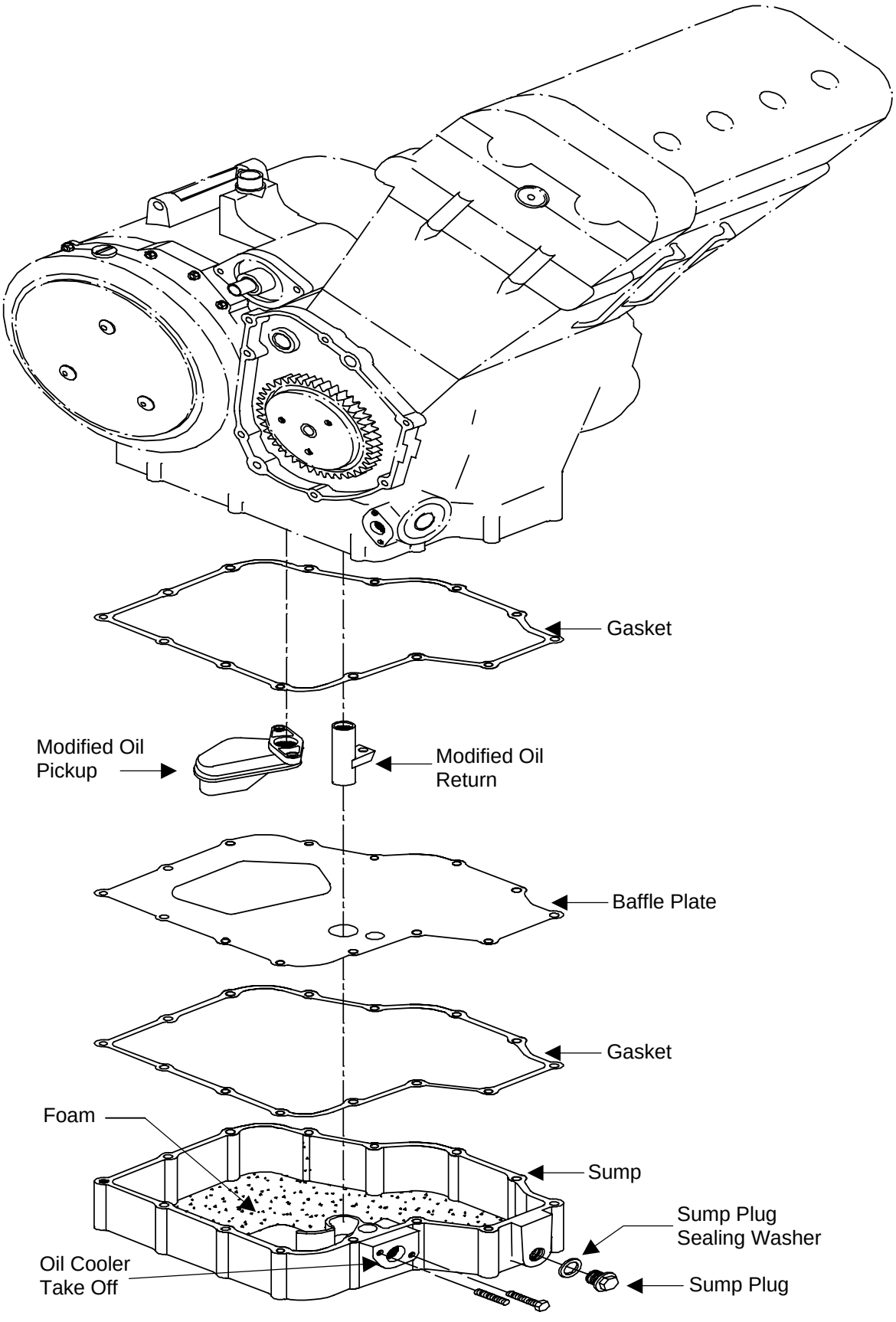
View 21



Attach the lower frame to the engine using an M12 x 285mm Stud 4 x Plain Washers and 2 x Nyloc Nuts. Place two of the washers under the nuts and the other washers go between the engine frame and the Gearbox.

Exploded View of Westfield Sump To Hayabusa Engine

Diagram 1



FRONT PROPSHAFT GEAR CHANGE
&
CLUTCH PIPE FITMENT

Tools Required:-

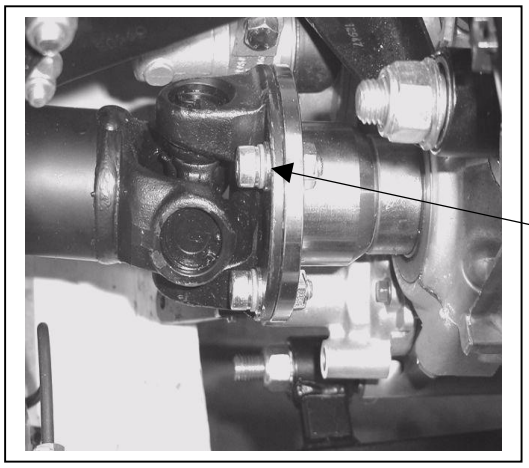
- 1 x 13mm Combination Spanner / 2 x 10mm Combination Spanners
  1 x 14mm Combination Spanner / Electric Drill / 4.1mm Dia Drill Bit
  Pop Rivet Gun / 1 x M6 Allen Key

Parts Required:-

- Imperial Banjo Bolt / 2 x Copper Washers / 4 x M8 x 25mm Socket Cap Screws
  4 x M8 Spring Washers / 4 x M8 x Plain Washers / 4 x M8 Binx Nuts
  Gear Change Rod (C.W. Rose Joints and Sleeves) / 2 x M6 x 30mm Bolts
  2 x M6 Nyloc Nuts / 1 x M6 x 25mm Screw / 1 x M6 Spring Washer
  3 x M6 Plain Washers / 1 x Loom Saddle / 1 x Cable Tie / 1 x 4.1mm Pop Rivet

Procedure:-

View 1



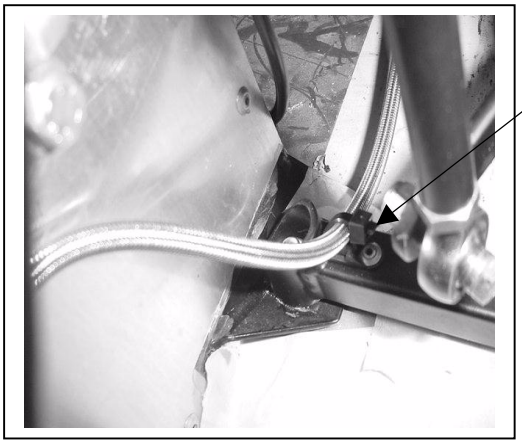
Attach the Front Propshaft to the Output Flange on the engine using
4 x M8 x 25mm Socket Cap Screws
4 x M8 Binx Nuts and a Spring and Plain Washer under the head of the screws.

View 2

Run the Clutch Pipe under the Propshaft and attach it to the Clutch Slave Cylinder using the Imperial Banjo Bolt with a Copper Washer on each side of the Banjo.

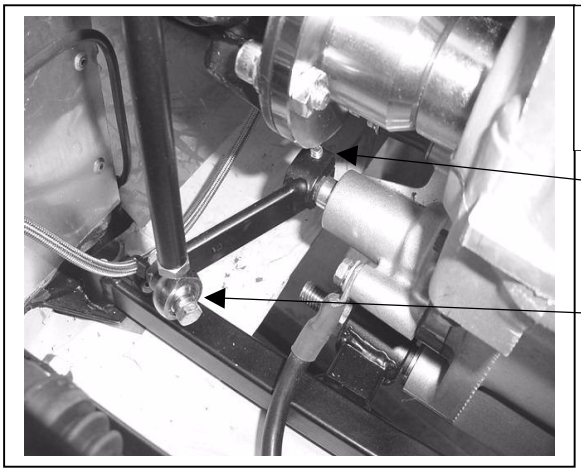
FRONT PROPSHAFT GEAR CHANGE & CLUTCH PIPE FITMENT CONTINUED

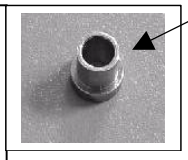
View 3



Drill and fit a Loom Saddle to the lower engine frame as shown. Attach the Clutch Pipe to the loom saddle using a Cable Tie.

View 4



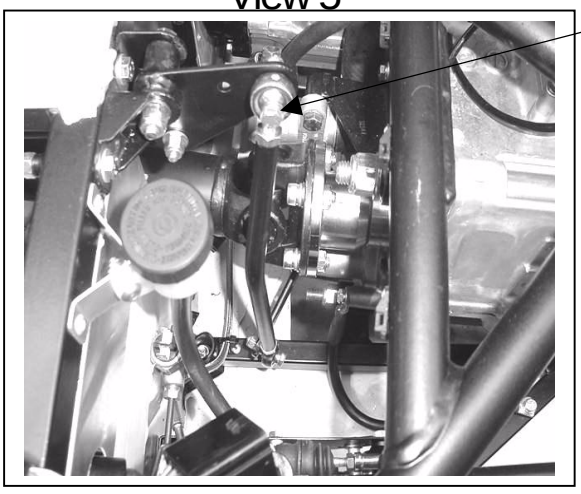


Make sure that Rose Joint Sleeves are inserted before fitting the Gearchange rod.

Attach the gear lever to the engine using an M6 x 25mm Screw with a spring and plain washer.

Attach the small Gearchange Rod to the gear lever using an M6 x 30mm Bolt with a plain washer under the Nyloc Nut.

View 5



Attach the other end of the Gearchange rod to the outer hole of the quadrant using an M6 x 30mm bolt with a Plain Washer under the Nyloc Nut, making sure the Sleeves are inserted into the Rose Joint.

Check the Gearchange rod is clear of the propshaft before tightening up the two M8 Locknuts.

Test the Gearchange now that it is fitted to make sure that it works and does not foul anywhere.

WATER PIPES RADIATOR & COOLING FAN

Tools Required:-

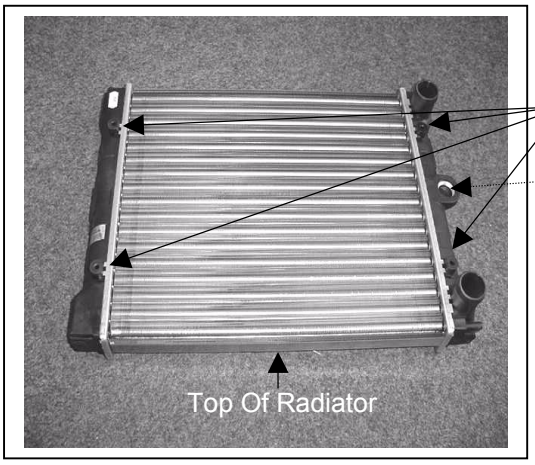
- Electric Drill / 5mm Dia Drill Bit / 6mm Dia Drill Bit / 4.1mm Dia Drill Bit
  2 x M10 Combination Spanners / 4mm Allen Key / Stanley Knife
  M6 Tap and Wrench / Medium Sized Flat Bladed Screwdriver or
  7mm Socket & Ratchet to Suit / Side Cutters

Parts Required:-

- Top Water Pipe Aluminium / Bottom Water Pipe Aluminium / Radiator
  Radiator Mounting Brackets / Cooling Fan C/W Fittings / Expansion Tank
  Expansion Tank Mounting Bracket / Cooling Fan Switch & Washer
  Water temp Sender / 5/16" Tee Piece / 2 x 90° Offset Rubber Hoses
  ¾ to ⅝ Rubber Hose / 5/16" Rubber Hose / 6 x 16mm Jubilee Clips
  6 x 25mm Jubilee Clips / 2 x 30mm Jubilee Clips / 2 x 40mm Jubilee Clips
  2 x 25mm 'P' Clips / 2 x 12mm Aluminium Spacers / 4 x Cable Ties
  6 x 4.1mm Dia Pop Rivets / 4 x M6 x 16mm Button Head Screws
  2 x M6 x 55mm Bolts / 2 x M6 x 35mm Bolts / 4 x M6 Spring Washers
  10 x M6 Plain Washers / 2 x M6 Penny Washers / 4 x M6 Nyloc Nuts

Procedure:-

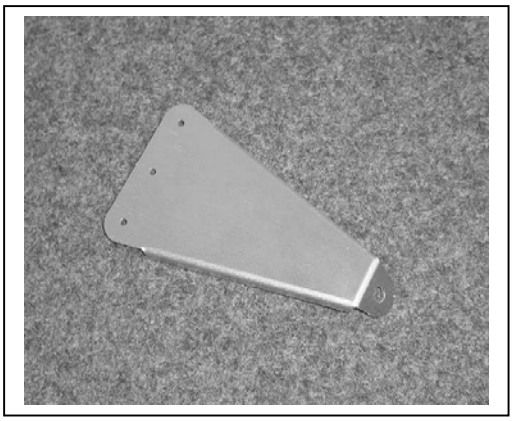
View 1



Before fitting the Radiator the four bosses on the radiator must be tapped out with an M6 tap.
Tap the four bosses on the same side as fitting for the fan switch.
WARNING WHEN TAPPING THE BOSSES ON THE RADIATOR DO NOT THREAD TAP TO FAR INTO TO BOSS AS THIS WILL DAMAGE THE RADIATOR

WATER PIPES RADIATOR & COOLING FAN CONTINUED

View 2

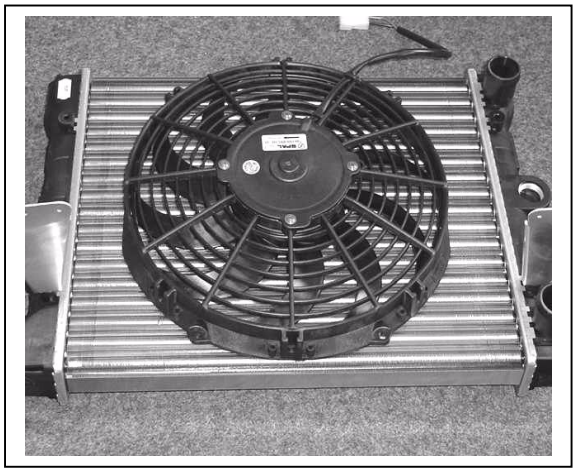


Identify the Aluminium top radiator fixings, which attaches to the radiator using 2 x M6 x 16mm Button Head Screws with a Spring and a Plain Washer.

View 3

Make sure both brackets are attached to the top of the radiator.

View 4



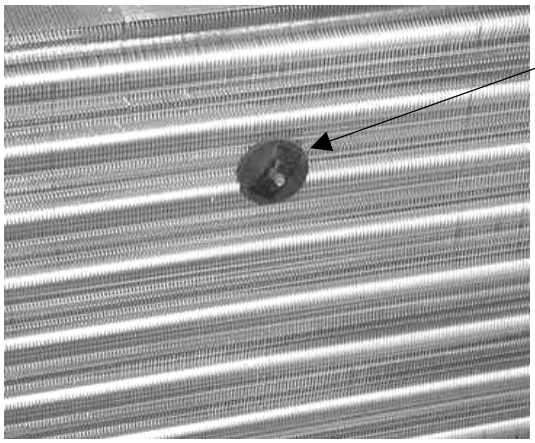
Place the Cooling Fan on top of the Radiator. Make sure that the Cooling Fan is positioned in the centre of the Radiator.
Insert the four mounting pins through the Cooling Fan and Radiator See View 5 for more information.

WATER PIPES RADIATOR & COOLING FAN CONTINUED

View 5

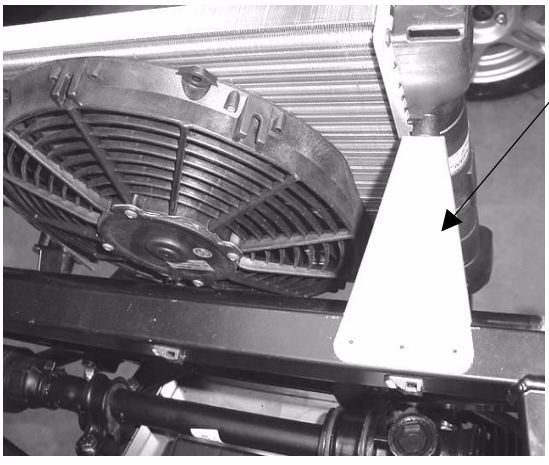
When Inserting the mounting Pins be very careful not to damage the cores on the radiator.

View 6



Push the rubber washer onto the mounting pin so it is up against the radiator, then push the locking clip onto the pin making sure the cooling fan is tight up against the radiator. Chop off any of the excess pin that protrudes after the locking clip.
WARNING Always make sure that the rubber washer is fitted before the locking clip.

View 7



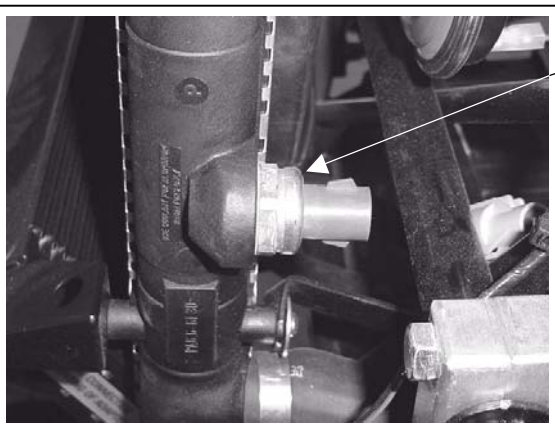
Position the radiator onto the upper front chassis rail. Hold the two Aluminium brackets in place using a 'G' Clamp on each one. Make sure that there is an equal gap either side between the Aluminium Bracket and the end of the chassis rail. Attach the two Aluminium Brackets using 6 x 4.1mm pop rivets.

WATER PIPES RADIATOR & COOLING FAN CONTINUED

View 8

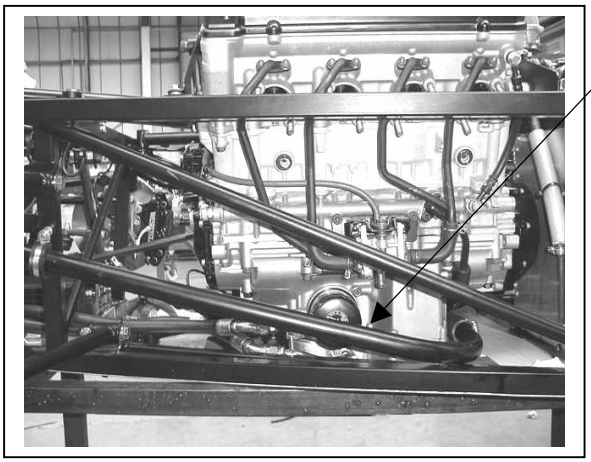
The lower radiator bracket on the chassis will require modification before the radiator can be attached to it. Secure the lower fixings with 2 x M6 x 16mm Button Head Screws with a Spring and Penny Washer.

View 9



Identify the Cooling Fan Switch and Sealing Washer, attach to the threaded boss on the Radiator.

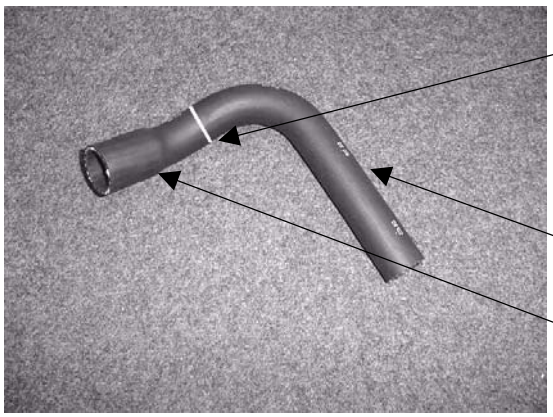
View 10



The lower cooling pipe runs from the water outlet that is situated under the clutch assembly to the rear of the engine. It runs over the top of the Steering Rack and attaches to the lower radiator pipe.
See following Views for more Information.

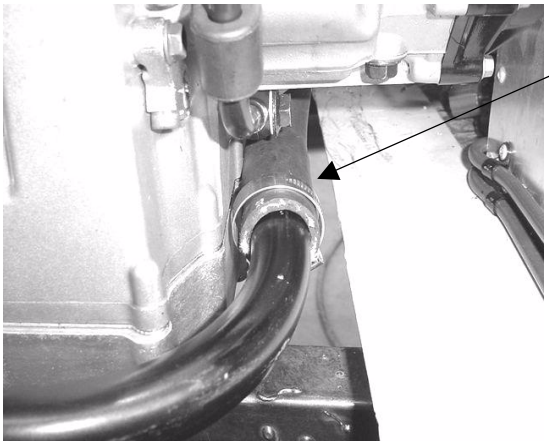
WATER PIPES RADIATOR & COOLING FAN CONTINUED

View 11



Identify the two rubber pipes which will attach the upper & lower cooling pipes.
These rubber pipes will have to be cut, the white mark shows the approximate place to cut the pipe.
This side of pipe connects from water pipe to engine.
This side of pipe connects from water pipe to radiator.

View 12



Attach the lower water pipe to the engine using the rubber pipe that has previously been cut and 2 x 25mm Jubilee Clips.

View 13

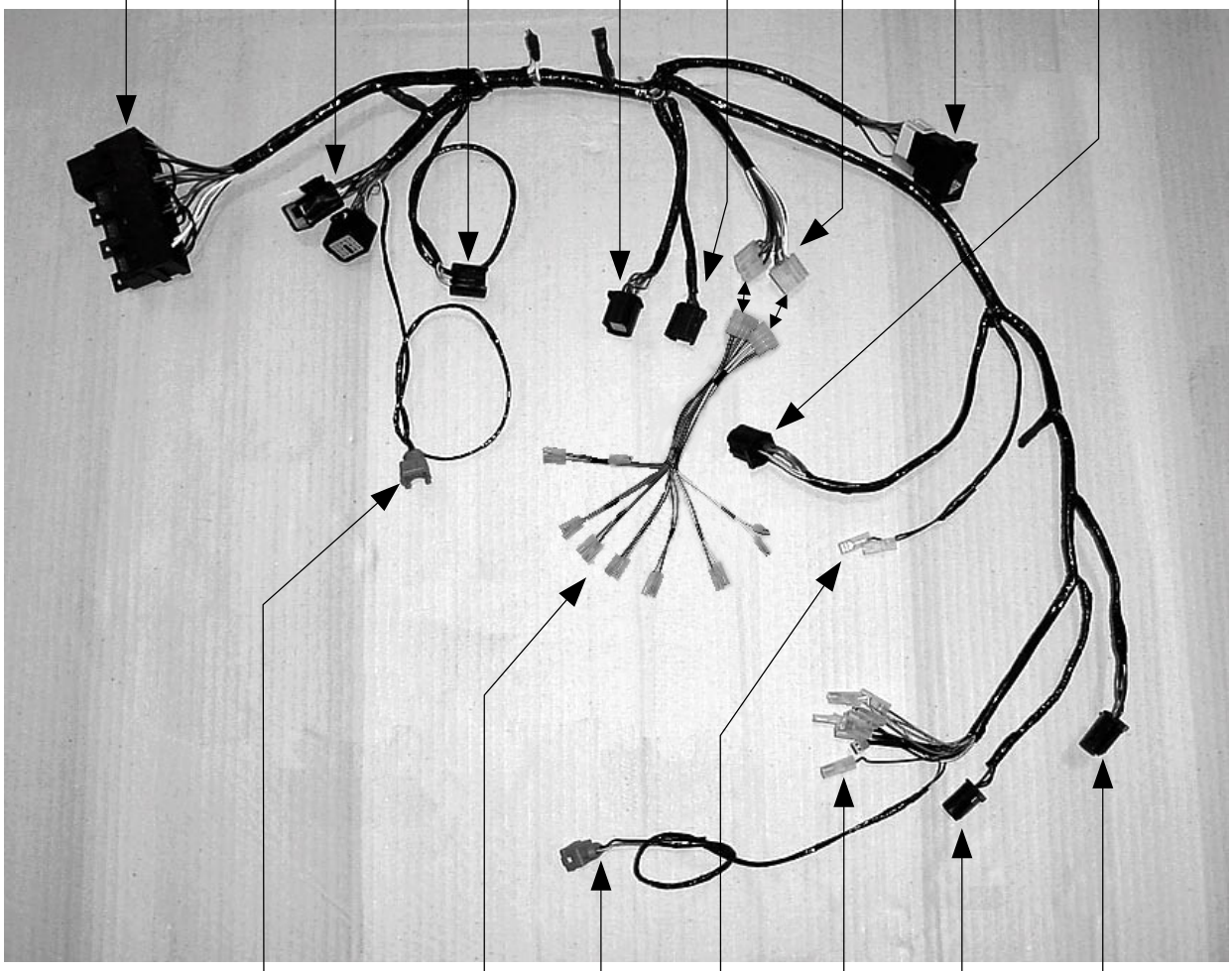
MEGA RANGE – RACE DASH WIRING LOOM DETAILS

CONNECTION	LOOM CONNECTOR TYPE	LOOM WIRE COLOURS	NOTES
MAIN LOOM	13 WAY BLACK CONNECTOR BLOCK – MALE	8 WIRES	PRE-WIRED
	13 WAY BLACK CONNECTOR BLOCK – FEMALE	11 WIRES	PRE-WIRED
WARNING LAMP CONNECTIONS	BARE WIRES	10 WIRES PAIRED AS FOLLOWS:	
		ORANGE ; GREEN	NEUTRAL LAMP
		BLACK ; GREEN / WHITE	OFF SIDE INDICATOR
		BLACK ; GREEN / RED	NEAR SIDE INDICATOR
		BLACK ; BLUE / WHITE	MAIN BEAM WARNING LAMP
		GREEN ; WHITE / BROWN	OIL PRESSURE (IF USED)
FUEL GAUGE	3 WAY BLACK CONNECTOR BLOCK	GREEN ; BLACK ; GREEN / BLACK	PRE-WIRED
TACHOMETER	3 WAY BLACK CONNECTOR BLOCK	GREEN - 1 PAIR ; BLACK – 1 PAIR ; WHITE / BLACK	PRE-WIRED
AUXILLARY	2 WAY BLACK CONNECTOR BLOCK	BLACK – 1 PAIR ; GREEN – 1 PAIR	PRE-WIRED
OFF SIDE INDICATOR	CONNECTOR BLOCK	BLACK ; GREEN / WHITE	PRE-WIRED
NEAR SIDE INDICATOR	CONNECTOR BLOCK	BLACK ; GREEN / RED	PRE-WIRED
INDICATOR TIMER UNIT	6 WAY CONNECTOR BLOCK	GREEN / RED ; GREEN / WHITE ; L.GREEN / BROWN ; BLACK ; GREEN	PRE-WIRED TIMER UNIT IS A SEPARATE ITEM TO THE LOOM
HANDBRAKE WARNING LAMP	2 FEMALE SPADE CONNECTORS	BLACK ; BLACK / WHITE	PRE-WIRED
DASH' SUB-LOOM CONNECTORS	2 x 7 WAY WHITE CONNECTORS	VARIOUS	PRE-WIRED
HAZARD WARNING SWITCH	PRE-CONNECTED	VARIUS	PRE-WIRED
RELAYS	CONNECTOR RAIL	VARIOUS	3 RELAYS & 1 FLASHER UNIT
GEAR POSITION INDICATOR (IF USED)	3 WAY CONNECTOR	BLACK ; YELLOW ; YELLOW / BLUE	PRE-WIRED
	6 WAY CONNECTOR	BLACK ; YELLOW ; YELLOW / BLUE ; ORANGE ; GREEN	PRE-WIRED

MEGA RANGE – RACE DASH SUB-LOOM DETAILS

CONNECTION	LOOM CONNECTOR TYPE	LOOM WIRE COLOURS	NOTES
MAIN-LOOM CONNECTORS	2 x 7 WAY WHITE CONNECTORS	VARIOUS	PRE-WIRED
START BUTTON	2 FEMALE SPADE CONNECTORS	WHITE ; WHITE / RED	PRE-WIRED
IGNITION SWITCH	2 FEMALE SPADE CONNECTORS	BROWN ; WHITE	PRE-WIRED
SIDE LIGHTS	2 FEMALE SPADE CONNECTORS	RED ; BROWN	PRE-WIRED
DIPPED BEAM	2 FEMALE SPADE CONNECTORS	BLUE ; RED	PRE-WIRED
MAIN BEAM	2 FEMALE SPADE CONNECTORS	BLUE ; BLUE / WHITE	PRE-WIRED
FOG LIGHT & WARNING LAMP	2 FEMALE SPADE CONNECTORS	BLUE ; RED / BLUE ; BLACK	PRE-WIRED
HORN	2 FEMALE SPADE CONNECTORS	PURPLE / BLACK ; PURPLE	PRE-WIRED

MEGA RANGE RACE DASH LOOM



SUZUKI HAYABUSA
WIRING LOOM MODIFICATIONS

NOTE:- Below are a list of plugs and modifications that will have to be undertaken on the Hayabusa Wiring Loom before it is installed into your Westfield Sports Car. THESE MODIFICATIONS SHOULD ONLY BE ATTEMPTED BY A COMPETENT PERSON, IF YOU ARE UNSURE AFTER READING THIS AND SEEING THE WIRING DIAGRAM PLEASE DO NOT ATTEMPT TO MODIFY YOUR LOOM AS WESTFIELD SPORTS CARS WILL NOT BE REASPONSIBLE FOR ANY DAMAGE CAUSED TO THE E.C.U. BY INCORRECT WIRING.

1:- ATMOSPHERIC PRESSURE SENSOR. No modification is required to the Three wires on the Atmospheric Pressure Sensor.
2:- ENGINE COOLANT TEMPERATURE SENSOR. The Two wires that come from the Engine Coolant Temperature Plug will need extending please make sure that all connections are soldered and insulated with a suitable Heat Shrink.
3:- VACUUM CONTROL SOLENOID VALVE. The Vacuum Control Solenoid Valve is not used in Westfield's installation. Please make sure that the two wires and the plug are NOT REMOVED but are tapped up into Loom.
4:- INTAKE AIR TEMPERATURE SENSOR. No modification is required to the Intake Air Temperature Sensor wires.
5:- INTAKE AIR PRESSURE SENSOR. No modification is required to the Intake Air Pressure Sensor wires.
6:- FUEL PUMP. Westfield Sports Cars DO NOT USE HAYABUSA FUEL PUMP. The Yellow / Red wire that goes to the Fuel Pump plug must be spliced into and taken to the Fuel Pump Fuse on the Westfield's Fuse Box (remove White wire from Fuel Pump Fuse now connect the wire that is spliced into the Yellow / Red onto the Fuel Pump Fuse) the White Wire that has been removed is looped into the next fuse along ONLY REMOVE THE LOOP OF WIRE AND STILL LEAVE CONNECTED TO NEXT FUSE UP FROM FUEL PUMP FUSE.
7:- FUEL INJECTORS. No modification is required to the Fuel Injector Wiring.
8.:- THROTTLE POSITION SENSOR. No modification is required to the Throttle Position Sensor Wiring.

HAYABUSA WIRING MODS CONTINUED:-

9:- FUEL PUMP RELAY. The Red / Blue on the Fuel Pump Relay should be removed from the Dashboard and the Fuse Box, and taken to the Red / White on the Starter Relay (also see section 16 Starter Relay). No other modification needed.
10:- TIP OVER SENSOR. Instead of the Tip Over Sensor connect the two wires together through a 62k ohm 0.6 watt resistor and insulate back into Loom.
11:- GEAR POSITION SWITCH. The Blue wire from the Gear Position Switch should be left connected to the ECM, but disconnected from the Side Stand Relay and connected to the orange wire on the Westfield Loom. No modification is required to the Pink or the Black / White wire.
12:- CAMSHAFT POSITION SENSOR. No modification is required to the Camshaft Position Sensor Wiring.
13:- CRANKSHAFT POSITION SENSOR. No modification is required to the Crankshaft Position Sensor Wiring.
14:- GENERATOR. No modification is required to the Generator Wiring.
15:- REGULATOR / RECTIFIER. Leave the Red wire connected to the Starter Relay, but remove it from the Ignition Switch Plug and the Fuse Box on the Hayabusa Loom. No modification is required to the three Yellow wires or the Black / White wire.
16:- STARTER RELAY. The Black / Yellow wire can be left connected to the ECM but removed from the Clutch Lever Position Switch and taken to a Micro-Switch on the Clutch Pedal Mechanism of the Westfield the other side of the Micro-Switch will need to go to Earth this is so the Engine can only be started when the Clutch is depressed (Westfield Sports Cars recommend this for safety). The Yellow / Green wire can be left connected to the ECM but removed from the Starter Button Plug and then taken to the White / Red on the Westfield Loom. The Red wire should be left connected to the Regulator / Rectifier but remove the rest of the Red wire up to the Ignition Switch and Fuse Box. The Red / White can be removed from the Fuse Box and should now be taken to the Red / Blue on the Fuel Pump Relay. The two main connections on the starter are labeled B and M, the B terminal should be connected to the Battery and the M terminal should be connected to the Starter Motor both of these connections should be made using Westfield,s Battery Leads.

HAYABUSA WIRING MODS CONTINUED:-

17:- MODE SELECTION SWITCH COUPLER. No modification is required to the wires going to the Mode Selection Switch Coupler.
18:- IGNITION COIL/PLUG CAP. No modification is required to the wires going to the Ignition Coil/Plug Cap.
19:- IGNITION SWITCH. The only wire used from the Ignition Switch is the Orange/Yellow, WHICH MUST BE CONNECTED THROUGH A 150 OHM 0.6 WATT RESISTOR TO EARTH IN ORDER FOR THE ENGINE TO RUN. The rest of the wires from the Ignition Switch can be removed (remember Red wire can only be removed to the point where it is connected into the Regulator/Rectifier and Starter Relay. THE CONNECTION BETWEEN THE REGULATOR/RECTIFIER AND THE STARTER RELAY MUST BE LEFT IN ORDER FOR THE CHARGING SYSTEM TO WORK.
20:- HAYABUSA DASHBOARD. The Dashboard is now **ONLY USED** for Diagnostic Purposes. The wires that you require to make this work are as follows, Black / Green which comes from the ECM this may require shortening as we have found that it is best to bring the Dashboard Plug out by the ECM. Orange / Green which should be connected to a suitable Orange / White. Black / White x 2 these two wires should be connected back onto a suitable Black / White. The rest of the wiring onto the Dashboard can be removed and insulated.
21:- UNNAMED PLUG. This Pug breaks out by the Mode Selection Switch Coupler. It has the following wire colors going to it, Black/Brown – Blue/White – Blue/Black – Blue/Green – Blue/Red – Blue/Yellow – Red. No modification is required to this wiring.
22:- EARTH. This is a thick Black/White that brakes out by the ECM and should be connected to the Chassis using a suitable connector.
23:- CONNECTIONS TO WESTFIELD LOOM. There are Five connections to the Westfield Loom these are as follows.
Ignition Feed:- This is a White Wire on the Westfield Loom and should be connected to the Orange/White on the Hayabusa Loom. This can be done by removing the Orange/White from the Engine Stop Switch and connecting the White from the Westfield Loom onto it. This will now power up the Ignition Coils, the ECM, the Hayabusa Dashboard when connected and the Fuel Pump Relay.

HAYABUSA WIRING MODS CONTINUED:-

Rev Counter:- This is a White/Black on the Westfield Loom and should be connected to the Yellow/Blue (disconnected from Dashboard) that comes from the ECM.
Neutral Light:- This is an Orange on the Westfield Loom and should be connected to the Blue that comes from the Gear Position Switch on the Hayabusa Loom (see section 11).
Starter Switch:- This is a White/Red on the Westfield Loom and should be connected to the Yellow/Green that comes from the Starter Relay on the Hayabusa Loom (see section 16).
Fuel Pump:- See section 6 for details.
NOTE. The Rest of the connectors for Lights, Cooling Fan, Horn, Light Switches, Fuel Level Gauge, Side Stand Switch and there corresponding wires can be carefully removed.

WARNING:- WESTFIELD SPORTS CARS RECOMMEND THAT THE CLUTCH SWITCH IS FITTED SO AS THE ENGINE WILL ONLY START WHEN THE CLUTCH IS FULLY DISSENGAGED THIS WILL HELP TO AVOID ANY STARTER DAMAGE!